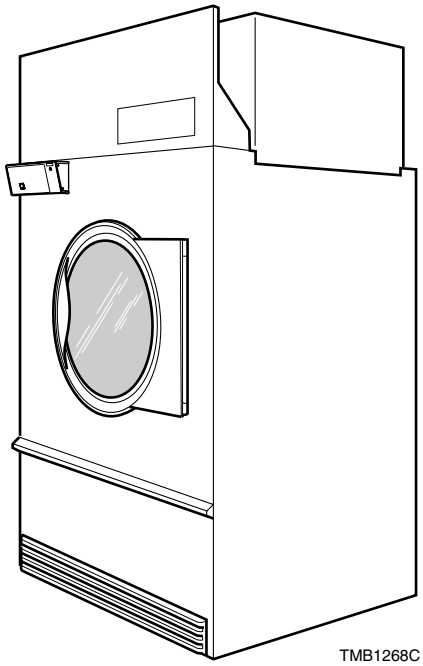
Drying Tumblers

120 Pound Capacity
170 Pound Capacity

Refer to Page 5 for Model Identification

Installation

NOTA: Para bajar una copia de estas instrucciones en español, visite www.comlaundry.com.



TMB1268C

Keep These Instructions for Future Reference.
(If this machine changes ownership, this manual must accompany machine.)

Alliance Laundry Systems

www.comlaundry.com

Part No. 70260301R8
January 2009

Installation must conform with local codes or, in the absence of local codes, with:

In the U.S.A., installation must conform to the latest edition of the American National Standard Z223.1/ NFPA 54 "National Fuel Gas Code" and Standard ANSI/NFPA 70 "National Electric Code."

In Canada, installation must comply with Standards CAN/CSA-B149.1 or Natural Gas and Propane Installation Code and CSA C22.1, latest edition, Canadian Electric Code, Part I.

In Australia, installation must comply with the Australian Gas Association Installation Code for Gas Burning Appliances and Equipment.

WARNING

FOR YOUR SAFETY, the information in this manual must be followed to minimize the risk of fire or explosion or to prevent property damage, personal injury or death.

W033

- **Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.**
- **WHAT TO DO IF YOU SMELL GAS:**
  - **Do not try to light any appliance.**
  - **Do not touch any electrical switch; do not use any phone in your building.**
  - **Clear the room, building or area of all occupants.**
  - **Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.**
  - **If you cannot reach your gas supplier, call the fire department.**
- **Installation and service must be performed by a qualified installer, service agency or the gas supplier.**

W052

MISE EN GARDE

POUR VOTRE SÉCURITÉ, les informations de ce guide doivent être respectées afin de réduire les risques d'incendie, d'explosion ou d'éviter les dommages matériels, personnels ou blessures mortelles.

W033R3QU

- **Ne pas entreposer ou utiliser d'essence ou toutes autres vapeurs et liquides inflammables à proximité de cette machine ou de tout autre appareil.**
- **QUE FAIRE EN CAS D'ODEUR DE GAZ :**
  - **Ne pas mettre d'appareil en marche.**
  - **Ne pas toucher aux interrupteurs électriques ; ne pas utiliser le téléphone des lieux.**
  - **Évacuer la pièce, le bâtiment ou la zone de tous les occupants.**
  - **Appeler immédiatement le fournisseur de gaz de la maison d'un voisin. Respecter les instructions communiquées par le fournisseur.**
  - **Si vous ne pouvez pas joindre le fournisseur de gaz, appeler le service d'incendie.**
- **L'installation et l'entretien doivent être effectués par un installateur, service d'entretien qualifiés ou par le fournisseur de gaz.**

W052R5QU

IMPORTANT: Information must be obtained from a local gas supplier on instructions to be followed if the user smells gas. These instructions must be posted in a prominent location. Step-by-step instructions of the above safety information must be posted in a prominent location near the tumbler for customer use.

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WARNING

- **Installation of unit must be performed by a qualified installer.**
- **Install tumbler according to manufacturer's instructions and local codes.**
- **DO NOT install a tumbler with flexible plastic venting materials. If flexible metal (foil type) duct is installed, it must be of a specific type identified by the appliance manufacturer as suitable for use with tumbler. Refer to section on connecting exhaust system. Flexible venting materials are known to collapse, be easily crushed, and trap lint. These conditions will obstruct tumbler airflow and increase the risk of fire.**

W752

FOR YOUR SAFETY

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

W053

MISE EN GARDE

- **L'unité doit être installée par un installateur qualifié.**
- **Installer la sécheuse conformément aux instructions du fabricant et aux codes locaux.**
- **NE PAS installer une sécheuse avec des matériaux d'aération souples en plastique. Si un conduit d'aération souple en métal (de type feuille mince) est utilisé, il doit être d'un type spécifiquement mentionné par le fabricant de l'appareil comme convenable pour utilisation avec sécheuses. Se reporter à la section sur la façon de connecter le système d'évacuation. Les matériaux d'aération souples risquent de s'affaisser, ils s'écrasent facilement, et les fibres et les peluches s'y accumulent. Ces conditions obstruent l'écoulement de l'air et augmentent les risques d'incendie.**

W752QU

POUR VOTRE SÉCURITÉ

Ne pas entreposer ou utiliser d'essence ou toutes autres vapeurs et liquides inflammables à proximité de cette unité ou de tout autre appareil.

W053R2QU

The following information applies to the state of Massachusetts, USA.

- This appliance can only be installed by a Massachusetts licensed plumber or gas fitter.
- This appliance must be installed with a 36 inch (91 cm) long flexible gas connector.
- A "T-Handle" type gas shut-off valve must be installed in the gas supply line to this appliance.
- This appliance must not be installed in a bedroom or bathroom.

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Introduction

Model Identification

Information in this manual is applicable to these models.

	Gas			Steam/Thermal Oil	
120 Pound	AT120L	HT120N	WT120L	AT120S	SU120S
	AT120N	HU120L	WT120N	DR120S2-BT120S	SU120T
	DR120G2-BA120L	HU120N	XT120L	DR120S2-BT120T	UT120S
	DR120G2-BA120N	IPD120G2-IT120L	XT120N	DR120S2-BU120S	UT120T
	DR120G2-BT120L	IPD120G2-IT120N	XU120L	DR120S2-BU120T	UU120S
	DR120G2-BT120N	SA120L	XU120N	CT120S	UU120T
	DR120G2-BU120L	SA120N	YT120L	CT120T	WT120S
	DR120G2-BU120N	ST120L	YT120N	CU120S	WT120T
	CA120L	ST120N		CU120T	XT120S
	CA120N	SU120L		HT120S	XT120T
	CT120L	SU120N		HT120T	XU120S
	CT120N	UA120L		HU120S	XU120T
	CU120L	UA120N		HU120T	YT120S
	CU120N	UT120L		IPD120S2-IT120S	YT120T
	HA120L	UT120N		IPD120S2-IT120T	YU120S
	HA120N	UU120L		ST120S	YU120T
	HT120L	UU120N		ST120T	
170 Pound	AT170L	HT170N	WT170L	AT170S	SU170S
	AT170N	HU170L	WT170N	DR170S2-BT170S	SU170T
	DR170G2-BA170L	HU170N	XT170L	DR170S2-BT170T	UT170S
	DR170G2-BA170N	IPD170G2-IT170L	XT170N	DR170S2-BU170S	UT170T
	DR170G2-BT170L	IPD170G2-IT170N	XU170L	DR170S2-BU170T	UU170S
	DR170G2-BT170N	SA170L	XU170N	CT170S	UU170T
	DR170G2-BU170L	SA170N	YT170L	CT170T	WT170S
	DR170G2-BU170N	ST170L	YT170N	CU170S	WT170T
	CA170L	ST170N		CU170T	XT170S
	CA170N	SU170L		HT170S	XT170T
	CT170L	SU170N		HT170T	XU170S
	CT170N	UA170L		HU170S	XU170T
	CU170L	UA170N		HU170T	YT170S
	CU170N	UT170L		IPD170S2-IT170S	YT170T
	HA170L	UT170N		IPD170S2-IT170T	
	HA170N	UU170L		ST170S	
	HT170L	UU170N		ST170T	

Includes models with the following control suffixes:

- RM – reversing OPL Micro
- RQ – reversing dual digital timer
- RT – reversing manual timer

Customer Service

If literature or replacement parts are required, contact the source from which the machine was purchased or contact Alliance Laundry Systems at (920) 748-3950 for the name and address of the nearest authorized parts distributor.

For technical assistance, call (920) 748-3121.

Wiring Diagram Location

The wiring diagram is located in the junction or contactor box.

Models starting Serial No. 0309_____ or later will have the wiring diagram part number in the lower portion of the electrical data on the serial plate.

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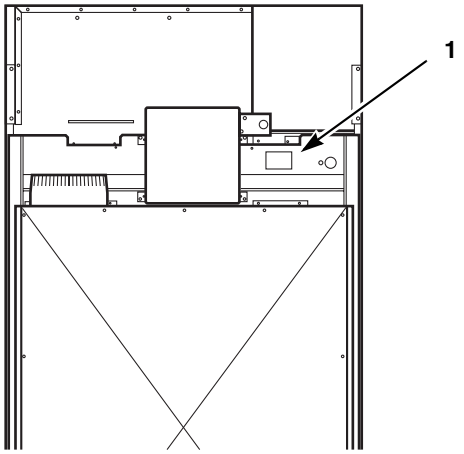
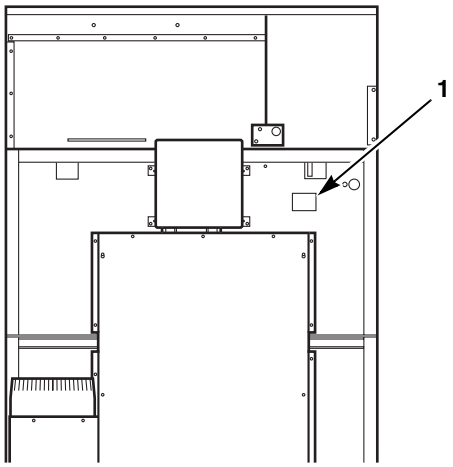
Serial Plate Location

When calling or writing for information about your product, be sure to mention model and serial numbers.

Model and serial numbers are located on the serial plate as shown.



120 POUND TUMBLER



170 POUND TUMBLER

TMB1298N

1 Serial Plate

Conversion Table

Multiply	By	To Obtain	Multiply	By	To Obtain
Btu	0.252	kCal	Pounds/sq. inch	0.06895	Bars
Btu	1055	Joules	Pounds/sq. inch	0.070	kg/sq. cm
Inch	25.4	Millimeters	Pounds (lbs.)	0.454	Kilograms
Inches W.C.	0.036	Pounds/sq. inch	Boiler Horsepower	33,479	Btu/hr.
Inches W.C.	0.249	kPa	Boiler Horsepower	34.5	lbs. steam/hr.
lb/inch^2 (psi)	6.895	kPa	CFM	0.471	liters/second
ft^3	28.32	Liters	kW	3414	Btu/hr.

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Safety Information

Precautionary statements ("DANGER," "WARNING," and "CAUTION"), followed by specific instructions, are found in this manual and on machine decals. These precautions are intended for the personal safety of the operator, user, servicer, and those maintaining the machine.

DANGER

DANGER – Indicates an imminently hazardous situation that, if not avoided, will cause severe personal injury or death.

WARNING

WARNING – Indicates a hazardous situation that, if not avoided, could cause severe personal injury or death.

CAUTION

CAUTION – Indicates a hazardous situation that, if not avoided, may cause minor or moderate personal injury or property damage.

Additional precautionary statements ("IMPORTANT" and "NOTE") are followed by specific instructions.

IMPORTANT: The word "IMPORTANT" is used to inform the reader of specific procedures where minor machine damage will occur if the procedure is not followed.

NOTE: The word "NOTE" is used to communicate installation, operation, maintenance or servicing information that is important but not hazard related.

WARNING

Failure to install, maintain, and/or operate this machine according to manufacturer's instructions may result in conditions which can produce serious injury, death and/or property damage.

W051R1

NOTE: The WARNINGS and IMPORTANT instructions appearing in this manual are not meant to cover all possible conditions and situations that may occur. It must be understood that common sense, caution and carefulness are factors which CANNOT be built into this tumbler. These factors MUST BE supplied by the person(s) installing, maintaining or operating the tumbler.

Always contact your dealer, distributor, service agent or the manufacturer on any problems or conditions you do not understand.

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Save These Instructions

Important Safety Instructions

WARNING

Hazardous Voltage. Can cause shock, burn or cause death. Allow machine power to remain off for two minutes prior to working in and around AC inverter drive.

W359

1. Read all instructions before using the tumbler.
2. Refer to the *Grounding Instructions* for the proper grounding of the tumbler.
3. Do not dry articles that have been previously cleaned in, washed in, soaked in, or spotted with gasoline, dry cleaning solvents, other flammable or explosive substances as they give off vapors that could ignite or explode.
4. Do not allow children on or in the tumbler. This appliance is not intended for use by young children or infirm persons without supervision. Young children should be supervised to ensure that they do not play with the appliance.
5. Before the tumbler is removed from service or discarded, remove the door to the drying compartment and the door to the lint compartment.
6. Do not reach into the tumbler if the cylinder is revolving.
7. Do not install or store the tumbler where it will be exposed to water and/or weather.
8. Do not tamper with the controls.
9. Do not repair or replace any part of the tumbler, or attempt any servicing unless specifically recommended in the user-maintenance instructions or in published user-repair instructions that you understand and have the skills to carry out.
10. Do not use fabric softeners or products to eliminate static unless recommended by the manufacturer of the fabric softener or product.
11. To reduce the risk of fire, **DO NOT DRY** plastics or articles containing foam rubber or similarly textured rubberlike materials.
12. Always clean the lint filter daily.
13. Keep area around the exhaust opening and adjacent surrounding area free from the accumulation of lint, dust and dirt.
14. The interior of the tumbler and the exhaust duct should be cleaned periodically by qualified service personnel.
15. If not installed, operated and maintained in accordance with the manufacturer's instructions or if there is damage to or mishandling of this product's components, use of this product could expose you to substances in the fuel or from fuel combustion which can cause death or serious illness and which are known to the State of California to cause cancer, birth defects or other reproductive harm.
16. Tumbler will not operate with the loading door open. **DO NOT** bypass the door safety switch to permit the tumbler to operate with the door open. The cylinder will stop rotating when the door is opened. Do not use the tumbler if the cylinder does not stop rotating when the door is opened or starts rotating without pressing or turning the START mechanism. Remove the tumbler from use and call for service.
17. Tumbler will not operate with lint panel open. **DO NOT** bypass lint panel safety switch to permit tumbler to operate with the lint panel open.
18. Do not put articles soiled with vegetable or cooking oil in the tumbler, as these oils may not be removed during washing. Due to the remaining oil, the fabric may catch on fire by itself.
19. To reduce the risk of fire, **DO NOT** put clothes which have traces of any flammable substances such as machine oil, flammable chemicals, thinner, etc. or anything containing wax or chemicals such as in mops and cleaning cloths, or anything dry-cleaned at home with dry-cleaning solvent in the tumbler.
20. Use the tumbler only for its intended purpose, drying fabrics.
21. **ALWAYS** disconnect the electrical power to the tumbler before servicing. Disconnect power by shutting off appropriate breaker or fuse.

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22. Install this tumbler according to this ***Installation Manual***. All connections for electrical power, grounding and gas supply must comply with local codes and be made by licensed personnel when required.
23. Remove laundry immediately after tumbler stops.
24. Always read and follow manufacturer's instructions on packages of laundry and cleaning aids. Heed all warnings or precautions. To reduce the risk of poisoning or chemical burns, keep them out of reach of children at all times (preferably in a locked cabinet).
25. Do not tumble fiberglass curtains and draperies unless the label says it can be done. If they are dried, wipe out the cylinder with a damp cloth to remove particles of fiberglass.
26. Always follow the fabric care instructions supplied by the garment manufacturer.
27. Never operate the tumbler with any guards and/or panels removed.
28. **DO NOT** operate the tumbler if it is smoking, grinding, has missing or broken parts.
29. **DO NOT** bypass any safety devices.
30. Failure to install, maintain, and/or operate this machine according to the manufacturer's instructions may result in conditions which can produce bodily injury and/or property damage.
31. Solvent vapors from dry-cleaning machines create acids when drawn through the heater of the unit. These acids are corrosive to the tumbler as well as to the laundry load being dried. Be sure make-up air is free of solvent vapors.

WARNING

To reduce the risk of serious injury, install lockable door(s) to prevent public access to rear of tumblers.

W055

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Specifications and Dimensions

Specifications	120 Pound	170 Pound
Noise level measured during operation at operator position of 3.3 feet (1 meter) in front of machine and 5.2 feet (1.6 meters) from floor.	66 dBA	66 dBA
Cylinder Size: Inches (mm)	44 x 41 (1118 x 1041)	50.75 x 42.5 (1289 x 1080)
Cylinder Capacity dry weight: Pounds (kg)	120 (54.4)	170 (77.1)
Cylinder Motor Horsepower	0.75	0.75
Fan Motor Horsepower	1	3
Air Outlet Diameter: Inches (mm)	10 (254)	12 (300)
Maximum Static Back Pressure: W.C.I. (mbar)	0.3 (0.8)	0.3 (0.8)
Maximum Airflow: C.F.M (L/sec.)	1600 (755)	2450 (1156)
Gas Models		
Net Weight (approximate): Pounds (kg)	1275 (580)	1575 (716)
Gas Connection	3/4 in. NPT	1 in. NPT
Gas Burner Rating: Btu/hr (Mj/hr)	300,000 (316)	395,000 (421)
Steam Models		
Net Weight (approximate): Pounds (kg)	1375 (625)	1675 (761)
Steam Connection	3/4 in. NPT inlet 3/4 in. NPT outlet	3/4 in. NPT inlet 1 in. NPT outlet
Steam Coil Rating at 100 psig: Boiler Horsepower (Btu/hr)	11.7 (405,000)	18.8 (648,000)

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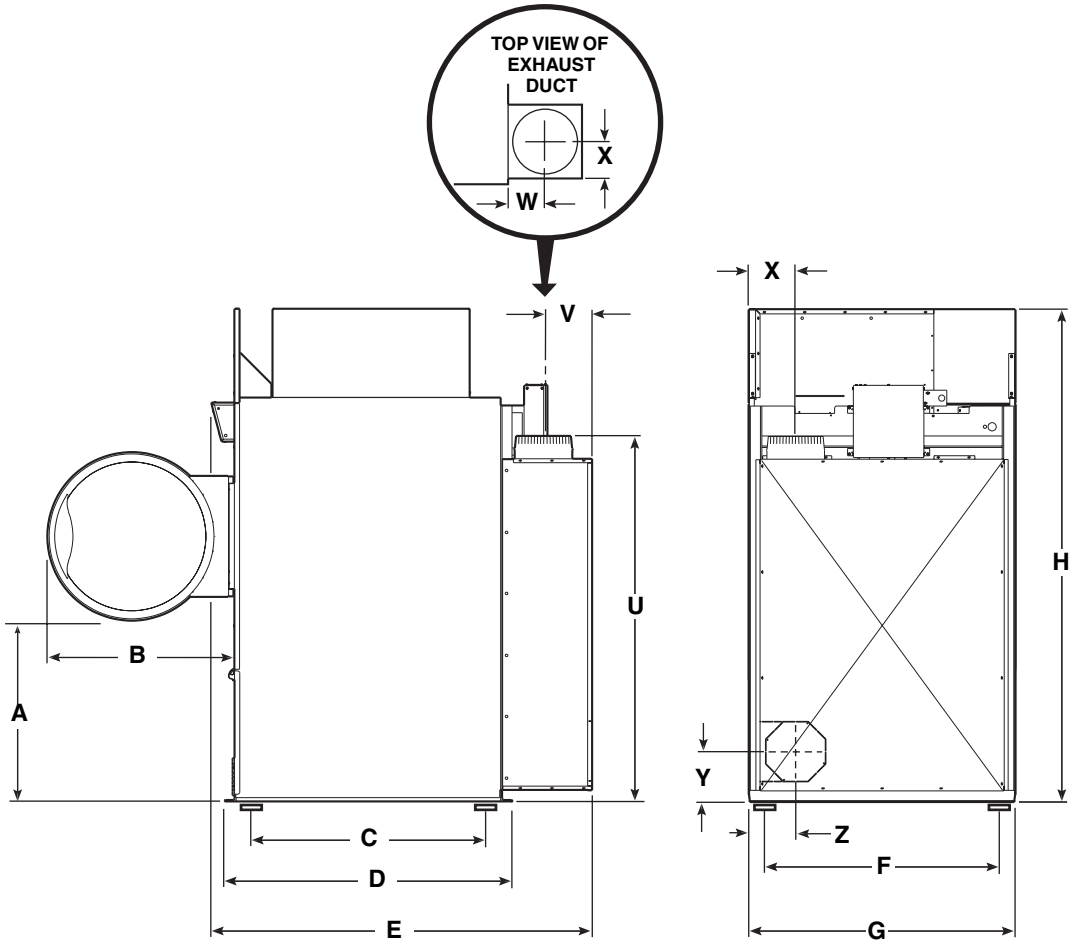
120 Pound Tumbler Dimensions and Exhaust Outlet Locations



Cabinet Dimensions								
Models	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**
120L/N	31.38 in. (797 mm)	32.5 in. (826 mm)	48.91 in. (1242 mm)	49.91 in. (1268 mm)	67.92 in. (1725 mm)	45.38 in. (1153 mm)	46.38 in. (1178 mm)	85.7 in. (2177 mm)
120S	31.38 in. (797 mm)	32.5 in. (826 mm)	48.91 in. (1242 mm)	49.91 in. (1268 mm)	67.92 in. (1725 mm)	45.38 in. (1153 mm)	46.38 in. (1178 mm)	83.5 in. (2121 mm)

Refer to ***Position and Level the Tumbler*** to temporarily reduce the heights of these models.

Exhaust Outlet Dimensions and Locations						
Models	**U**	**V**	**W**	**X**	**Y**	**Z**
120L/N	63.45 in. (1612 mm)	8.44 in. (214 mm)	7.5 in. (190 mm)	8.18 in. (208 mm)	8.75 in. (222 mm)	8.18 in. (208 mm)
120S	60.7 in. (1542 mm)	8.44 in. (214 mm)	7.5 in. (190 mm)	8.18 in. (208 mm)	8.75 in. (222 mm)	8.18 in. (208 mm)

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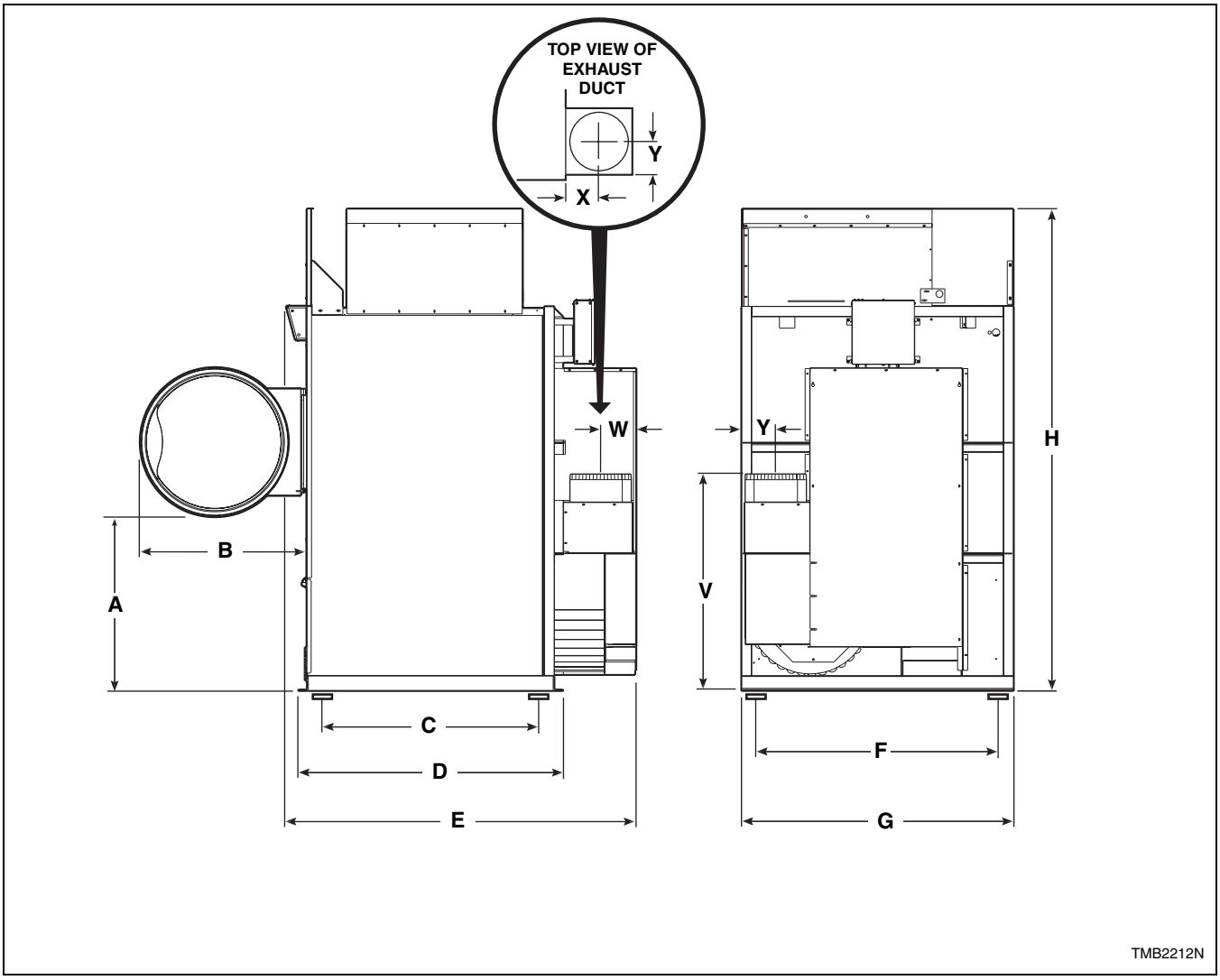
170 Pound Tumbler Dimensions and Exhaust Outlet Locations



Cabinet Dimensions								
Models	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**
170L/N/S	33.86 in. (860 mm)	32.5 in. (826 mm)	50.75 in. (1289 mm)	51.75 in. (1314 mm)	68.85 in. (1749 mm)	52.12 in. (1324 mm)	53.12 in. (1349 mm)	94 in. (2388 mm)

Refer to ***Position and Level the Tumbler*** to temporarily reduce the heights of these models.

Exhaust Outlet Dimensions and Locations				
Models	**V**	**W**	**X**	**Y**
170L/N/S	42.38 in. (1076 mm)	6.75 in. (171 mm)	8.75 in. (222 mm)	7 in. (178 mm)

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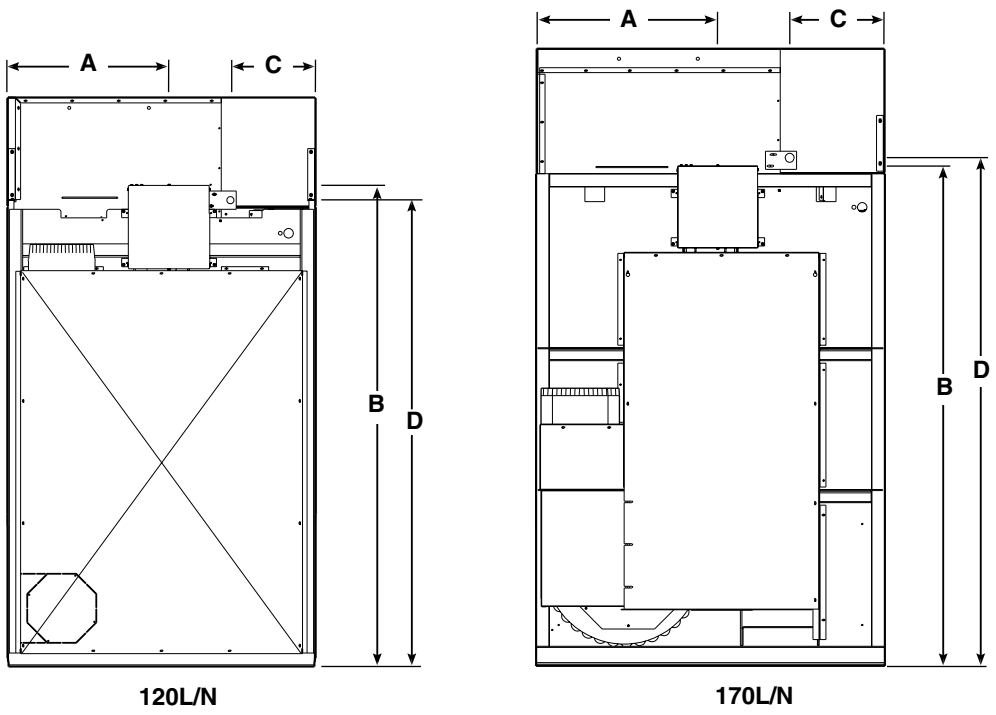
Electric and Gas Connection Locations for Gas Models



Models		Electrical Connection		Gas Connection		
		A	B	C	D	Diameter
Non-CE	120L/N	27.63 in. (702 mm)	72.24 in. (1835 mm)	12.78 in. (325 mm)	70.12 in. (1781 mm)	3/4 in. NPT
	170L/N	31.12 in. (790 mm)	76.11 in. (1933 mm)	14.5 in. (368 mm)	77.38 in. (1965 mm)	1 in. NPT
CE	120L/N	19.69 in. (500 mm)	74.98 in. (1904 mm)	12.78 in. (325 mm)	70.12 in. (1781 mm)	3/4 in. NPT
	170L/N	23.18 in. (589 mm)	78.85 in. (2003 mm)	14.5 in. (368 mm)	77.38 in. (1965 mm)	1 in. NPT

NOTE: These figures are approximate dimensions only.

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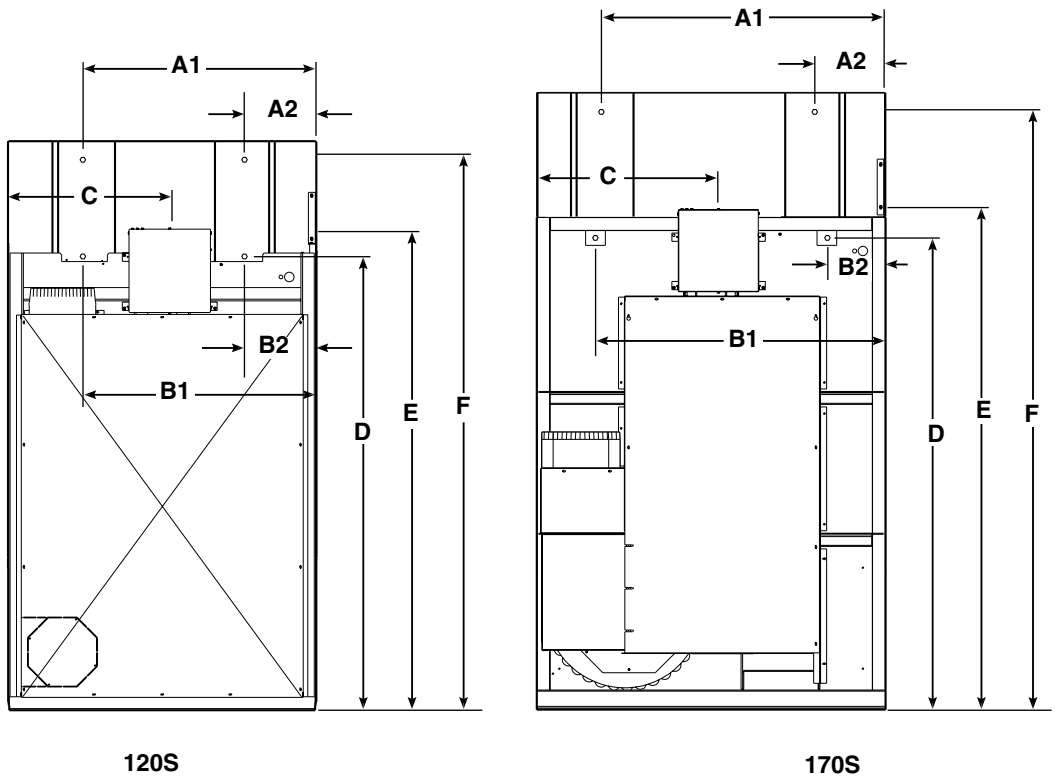
Electric and Steam Connection Locations for Steam Models



Models	Steam Inlet			
	Diameter	A1	A2	F
120S	3/4 in. NPT	35.875 in. (911 mm)	13.375 in. (340 mm)	82.75 in. (2102 mm)
170S	3/4 in. NPT	37.625 in. (956 mm)	15.25 in. (387 mm)	88 in. (2235 mm)

Models	Steam Outlet			
	Diameter	B1	B2	D
120S	3/4 in. NPT	34.625 in. (879 mm)	13.125 in. (333 mm)	68.5 in. (1740 mm)
170S	1 in. NPT	44.625 in. (1133 mm)	8.75 in. (222 mm)	71.75 in. (1822 mm)

Models		Electrical Connection	
		C	E
Non-CE	120S	27.63 in. (702 mm)	72.24 in. (1835 mm)
	170S	31.12 in. (790 mm)	76.11 in. (1933 mm)
CE	120S	19.69 in. (500 mm)	74.98 in. (1904 mm)
	170S	23.18 in. (589 mm)	78.85 in. (2003 mm)

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Installation

Pre-Installation Inspection

Upon delivery, visually inspect the crate, carton and parts for any visible shipping damage. If the crate, carton or cover is damaged or signs of possible damage are evident, have the carrier note the condition on the shipping papers before the shipping receipt is signed, or advise the carrier of the condition as soon as it is discovered.

Remove the crate and protective cover as soon as possible and check the items listed on the packing list. Advise the carrier of any damaged or missing articles as soon as possible. A written claim should be filed with the carrier immediately if articles are damaged or missing.

IMPORTANT: Warranty is void unless tumbler is installed according to instructions in this manual. Installation should comply with minimum specifications and requirements detailed in this manual and applicable local gas fitting regulations, municipal building codes, water supply regulations, electrical wiring regulations, and any other relevant statutory regulations. Due to varied requirements, applicable local codes should be thoroughly understood and all pre-installation work arranged for accordingly.

Materials Required (Obtain locally)	
All Models	One disconnect switch or circuit breaker.
Gas Models	One gas shut-off valve for gas service line to each tumbler.
Steam Models	One steam shut-off valve for steam service line to be connected upstream of solenoid steam valve. Two steam shut-off valves for each condensate return line. Flexible steam hoses with a 125 psig (pounds per square inch gauge) (8.79 kg/sq. cm) working pressure for connecting steam coils. Refer to *Figure 17* and *Figure 18* or sizing and connection configurations. Three steam traps for steam coil outlet to condensate return line. Optional – Three vacuum breakers for condensate return lines.

IMPORTANT: Keep tumbler area clear and free from combustible materials, gasoline and other flammable vapors and liquids.

Location Requirements

The tumbler must be installed on a level floor. Floor covering materials such as carpeting or tile must be removed.

To assure compliance, consult local building code requirements. The tumbler must not be installed or stored in area where it will be exposed to water and/or weather.

IMPORTANT: DO NOT block the airflow at the rear of the tumbler with laundry or other articles. Doing so would prevent adequate air supply to the combustion chamber of the tumbler.

A typical tumbler enclosure is shown in *Figure 1*. Note the minimum and maximum dimensions. Local codes and ordinances must be complied with.

WARNING

To reduce the risk of serious injury, install lockable door(s) to prevent public access to rear of tumblers.

W055

IMPORTANT: Install tumblers with sufficient clearance for servicing and operation. Refer to *Figure 1*.

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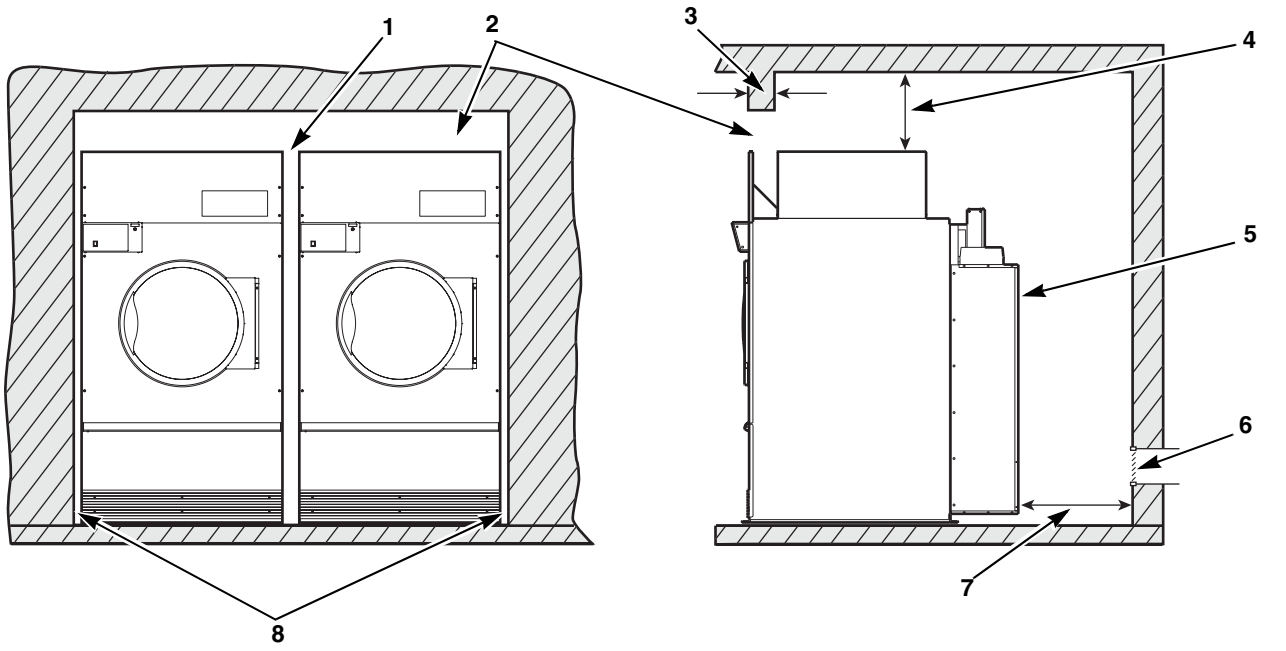
WARNING

To reduce the risk of severe injury, clearance of tumbler cabinet from combustible construction must conform to the minimum clearances.

W056



TMB2020N

NOTE: Shaded areas indicate adjacent structure.

1 0.5 in. (13 mm) recommended between machines for removal or installation.

2 Allow 2-4 in. (51-102 mm) opening at top of machine to aid in removal or installation. A removable trim piece may be used to conceal the opening; zero clearance allowed for trim.

3 4 in. (102 mm) maximum header thickness

4 Minimum clearance permitted for remainder: Gas 4 in. (102 mm), Steam 12 in. (305 mm)

5 Guard

6 Provision for Make-Up Air

7 24 in. (610 mm) minimum, 36 in. (914 mm) recommended for maintenance purposes

8 0.25 in. (6 mm) recommended for removal or installation purposes, zero clearance allowed

Figure 1

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Position and Level the Tumbler

The tumbler may be moved with or without the skid. To remove the skid, unscrew the four shipping bolts, and discard them.

To fit a 170 pound tumbler (with shipping skid) through an 8 foot (2.43 meters) high door, you must remove the front access panel. The upper 3 inches (76 mm) of the stove must also be removed on 170 pound gas tumblers. Removing the entire gas or steam heater assembly and the shipping skid, will reduce the height of the 120 pound tumbler to 70 inches (1778 mm), and the 170 pound tumbler to 75 inches (1905 mm).

Level the tumbler to within 0.125 inch (3 mm) from front-to-rear (level on cylinder rib), and side-to-side (level on top panel). Shim under corners to level and stabilize unit. Tumbler must not rock.

Before Placing Tumbler into Service

1. Remove or open all panels and check accessible bolts, nuts, screws, terminals and fittings for tightness.
2. Check V-belt tension and adjust if necessary. Refer to appropriate paragraphs in ***Adjustments*** Section.
3. Replace all panels and guards.
4. Turn on electrical supply to tumbler.
5. Open supply valve for gas or steam heated tumblers.
6. After performing the previous checks, start the tumbler by pressing START (hold for approximately 3 seconds). Release the start button and open the loading door. The cylinder should stop rotating within 7 seconds after the door is opened.
7. **Gas tumblers:** Start the tumbler and check the burner flame. Adjust the gas inlet shutter as required. Refer to ***Adjustments*** section.

IMPORTANT: The Electronic Ignition system will attempt to light the gas by sparking for the "trial for ignition" period. If gas does not ignite within this period, the ignition control will go into a safety lockout and the valve will no longer open until the control is reset. Refer to *Table 1*. It may be necessary to restart several times to bleed air out of gas lines. To reset, open and close loading door, then start.

Location	Prepurge Time (seconds)	Trial for Ignition (seconds)	Reset Lockout Condition By:
Australia	18	5	Open loading door
CE	18	10	Press reset button on control panel
All others	1-3	10	Open loading door

Table 1

If lockout condition persists, check that the manual gas shut-off valve is in the open position and that the gas service is properly connected. If condition still persists, remove tumbler from service.

8. Load the cylinder with a full load of clean rags and run to remove oil or dirt from cylinder.

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WARNING

The tumbler must not be operated if the airflow switch does not operate properly. Faulty airflow switch operation may cause an explosive gas mixture to collect in the tumbler.

W072

9. Check the airflow switch operation by opening the lint panel; be sure to remove shipping tape from airflow switch prior to operation. Refer to *Figure 20*. Temporarily tape down the lint panel safety switch located behind the upper left corner of the lint panel. The heating systems should shut off when the lint panel is opened a maximum of 6 inches (152.4 mm). The airflow switch operation may be affected by lack of make-up air or an obstruction in the exhaust duct. These should be checked; if there is a problem, contact an authorized service person.
10. Wipe out the cylinder using an all-purpose cleaner or detergent and water solution.

If tumbler does not meet any of the listed requirements, remove tumbler from service. Refer to ***Removing Tumbler from Service*** section.

Required for CE Models Only

Once machine is installed, please be sure to complete the following items:

- Review and verify machine operation with customer.
- Leave all literature and a signed Declaration of Conformity with customer.
- Review machine warranty information with customer.
- Apply warning sticker on front panel of machine, in language appropriate to country of sale (included in literature packet).

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Installing CE Gas Drying Tumblers

WARNING

To reduce the risk of electric shock, fire, explosion, serious injury or death:

- **Disconnect electric power to the tumbler before servicing.**
- **Close gas shut-off valve to gas tumbler before servicing.**
- **Close steam valve to steam tumbler before servicing.**
- **Never start the tumbler with any guards/ panels removed.**
- **Whenever ground wires are removed during servicing, these ground wires must be reconnected to ensure that the tumbler is properly grounded.**

W002

General Information

This information is to be used when installing gas tumblers in countries, and/or on gases, different than the machine's factory configuration. Tumblers are supplied from the factory for operation on Natural Gas 1000 Btu/cu ft. (8914 kcal/m^3), or L.P. Gas 2500 Btu/cu ft. (22,250 kcal/m^3) in the countries of GB/IE/PT/ES/IT/GR/LU/CH. To install machines in any other country or on any other gas requires some level of modification.

Models are built in two different configurations:

- **Regulated Natural Gas** – Injector is sized for Natural Gas, second family, group H (E) at 20 mbar inlet pressure. Regulator/governor is operational. Gas valve CAN be field converted to a non-regulating type.
- **Unregulated L.P. (Liquefied Petroleum) Gas** – Injector is sized for L.P. Gas, third family, group 3+ at 28.37 mbar inlet pressure. Regulator/ governor is blocked open. Gas valve CAN be field-converted to a regulating type.

Serial plates supplied from the factory are configured for the countries of GB/IE/PT/ES/IT/GR/LU/CH. These instructions pertain to the situations when the country of use or gas supply is different than that on the serial plate.

Table 2 describes the different gases that are available in different CE countries, and how the machines need to be configured to operate with those gases. In the CE, there are Natural Gas configurations that do not allow for machine regulation, and L.P. Gas configurations that must be regulated. For L.P. Gas, third family B/P at 50 mbar, order Regulated Natural Gas machines and convert according to *Table 2*.

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Gases and Configurations

Country Code	Gas Type	Group	Supply Pressure, mbar	Burner Orifice Pressure, mbar	Capacity/ Model	Diameter, mm	Quantity	Burner Orifice Part No.
DK/NO/ SE/FI/CZ/ EE/LV/LT/ SI/SK	Natural Gas	E	20	8.9 8.0	120 170	4.8 4.8	3 4	M411372 M411372
	L.P. Gas	B/P	30	No Governor	120 170	2.6 3.4	3 3	M411376 M400997
DE**	Natural Gas	E	20	8.9 8.0	120 170	4.8 4.8	3 4	M411372 M411372
	L.P. Gas	B/P	30 and No Governor or 26.4 or 50** and No Governor or 28.7		120 170	2.6 3.4	3 3	M411376 M400997
NL	Natural Gas	LL	25	12.0	120 170	4.8 4.8	3 4	M411372 M411372
	L.P. Gas	B/P	30	No Governor	120 170	2.6 3.4	3 3	M411376 M400997
BE/FR*	Natural Gas	E+	20 or 25	No Governor*	120 170	4.2 3.8	3 4	M402995 M402997
	L.P. Gas	3+	28 or 37	No Governor	120 170	2.6 3.4	3 3	M411376 M400997
GB/IE/PT/ ES/IT/GR/ LU/CH	Natural Gas	E	20	8.9 8.0	120 170	4.8 4.8	3 4	M411372 M411372
	L.P. Gas	3+	28 or 37	No Governor	120 170	2.6 3.4	3 3	M411376 M400997
AT**	Natural Gas	E	20	8.9 8.0	120 170	4.8 4.8	3 4	M411372 M411372
	L.P. Gas	B/P	50**	26.4 28.7	120 170	2.6 3.4	3 3	M411376 M400997
CY/IS/MT	L.P. Gas	B/P	30	No Governor	120 170	2.6 3.4	3 3	M411376 M400997
HU	Natural Gas	H	25	8.9 8.0	120 170	4.8 4.8	3 4	M411372 M411372
	L.P. Gas	B/P	30	No Governor	120 170	2.6 3.4	3 3	M411376 M400997
PL	Natural Gas	H	20	8.9 8.0	120 170	4.8 4.8	3 4	M411372 M411372
	L.P. Gas	3P	37	No Governor	120 170	2.6 3.4	3 3	M411376 M400997

Table 2

Burner orifice information at 0-2000 feet (0-600 meters) altitude.

* For Natural Gas, Group E+ applications, convert using L.P. Gas model and replace burner orifices.

** For L.P. Gas, Group B/P with 50 mbar supply pressure, convert using Natural Gas model and appropriate burner orifices.

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Basic Configuration

1. Determine the necessary conversion operations to convert from the factory-supplied configuration to the desired configuration.
2. Perform the conversions required so the machine is properly configured for the desired country and gas (refer to ***Specific Conversion Procedures*** section):
   - How to Convert Gas Valve from Regulated to Unregulated

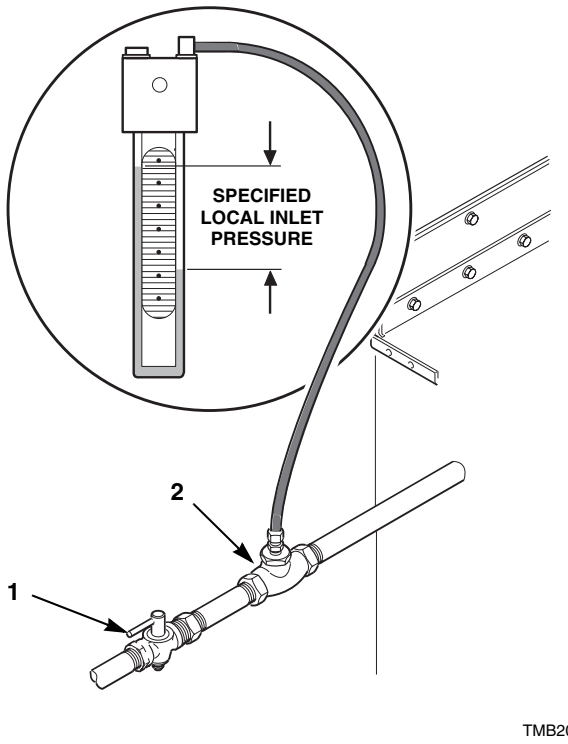
NOTE: Conversion from regulated to unregulated is only needed when regulated tumblers were ordered, but unregulated tumblers were needed.

   - How to Change Burner Orifice Size
   - How to Adjust Gas Valve Governor/Regulator
3. If applicable, peel off the appropriate country sticker (included with machine) and apply it to the serial plate over the existing country information.
4. If applicable, peel off the appropriate conversion sticker (included with machine) and apply it to the serial plate over the "ADJUSTED FOR _____ GAS: _____" information.
5. Commission tumbler for use.

WARNING

When converting the tumbler to a different gas or pressure, first verify that the supply inlet pressure is equipped with a pressure regulator (located ahead of the tumbler) that will maintain the gas supply at the inlet pressure specified.

W430



1 Gas Shut-Off Valve (Ahead of pressure tap)
2 Pressure Tap

Figure 2

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Specific Conversion Procedures

How to Convert Gas Valve from Regulated to Unregulated

NOTE: Conversion from regulated to unregulated is only needed when regulated tumblers were ordered, but unregulated tumblers were needed.

1. B-M Gas Valve:

   (120 Pound Models)

   Refer to *Table 2*.

   a. Disconnect electrical power from tumbler. Close gas shut-off valve to tumbler. Refer to *Figure 2*.

   b. Remove converter cover screw. Invert brass converter and install with breather hole down. Reinstall converter cover screw. Refer to *Figure 4*.

   c. Change burner size as required by the appropriate table according to ***How to Change Burner Orifice Size***.

   d. Commission tumbler for use.

2. Johnson GM2000 Gas Valve:

   (170 Pound Models)

   Refer to *Table 2*.

   a. Disconnect electrical power from tumbler. Close gas shut-off valve to tumbler. Refer to *Figure 2*.

   b. Loosen screws on regulator adjustment knob, then turn knob clockwise. When knob no longer turns, retighten screws. Refer to *Figure 3*.

   c. Change burner size as required by the appropriate table according to ***How to Change Burner Orifice Size***.

   d. Commission tumbler for use.

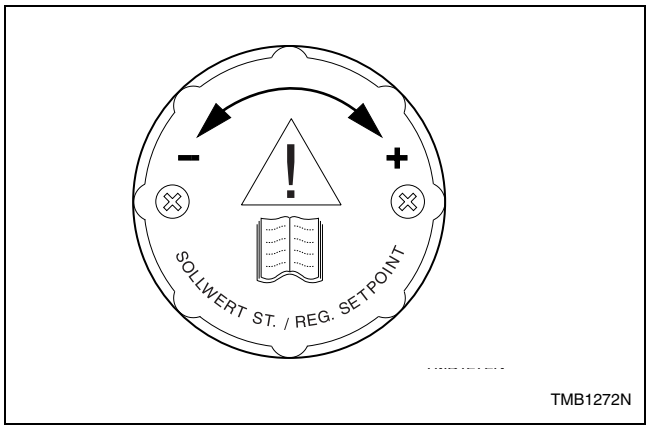

Figure 3

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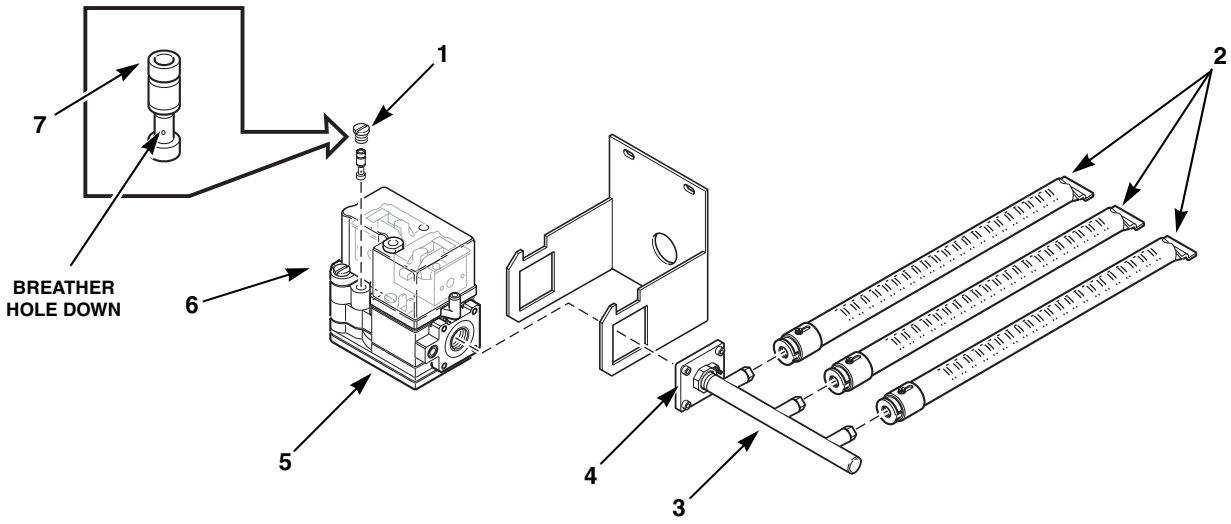

UNREGULATED (REGULATOR BLOCKED OPEN)

TMB2023N

1	Converter Cover Screw	5	Gas Valve
2	Burner	6	Regulator Cap
3	Spud Holder	7	Brass Converter
4	Gas Valve Flange Gasket		

Figure 4

How to Change Burner Orifice Size

1. Disconnect electrical power from tumbler. Close gas shut-off valve to tumbler. Refer to *Figure 2*.
2. Remove gas valve:
   a. **B-M Gas Valve (120 Pound Models)** – Use a 4 mm Allen wrench to remove the four screws holding the spud holder flange to the gas valve. Remove the burner orifice(s) from the spud holder. Refer to *Figure 4*.
   b. **Johnson GM2000 Gas Valve (170 Pound Models)** – Use a 5 mm Allen wrench to remove the four screws holding the spud holder flange to the gas valve. Remove the burner orifice(s) from the spud holder. Refer to *Figure 4*. When converting from Natural Gas to L.P. Gas, the left-most burner and orifice (viewed from front) must be removed. In place of the removed orifice, a blank orifice (Part No. M400995) and a Burner Opening Cover (Part No. M413099) must be installed.
3. Install the new, correct orifices. Refer to *Figure 6*. Torque each to 9-10 Nm.
4. Reinstall spud holder assembly to gas valve, making certain orifice(s) are in line with burner tube opening, and flange gasket is in place in flange groove. Refer to *Figure 4*.
5. Commission tumbler for use.

NOTE: Blank burner orifices are available as Part No. M400995.

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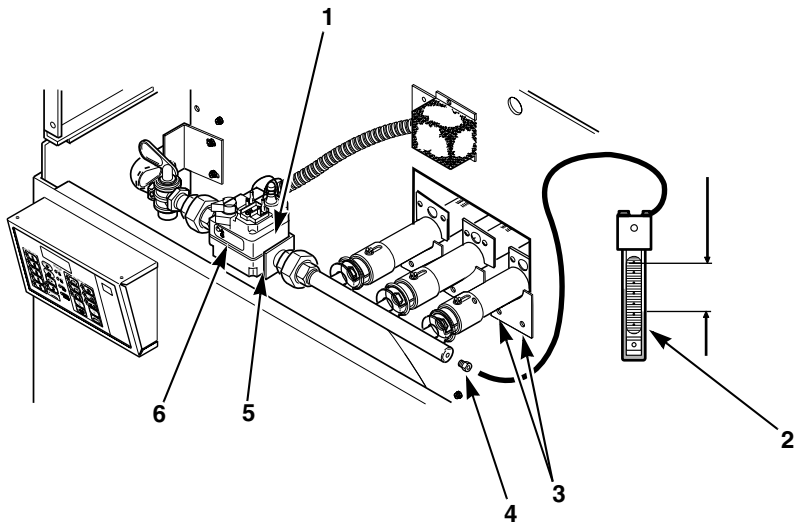


1	Pressure Tap (Alternate location)	4	Pressure Tap
2	Manometer	5	Gas Valve Flange
3	Burner Tube Attaching Screws	6	Gas Valve

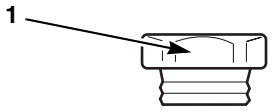
Figure 5

How to Adjust Gas Valve Governor/Regulator

1. Check gas burner orifice (manifold) pressure as follows. Refer to *Figure 5*.
2. Remove screw plug from inside pressure tap.
3. Connect a “U”-tube manometer (or similar pressure gauge) to the orifice (manifold) pressure tap.
4. Start tumbler and note pressure once flame is burning.

   For 120 pound tumblers, remove regulator cap and adjust regulator screw until the burner orifice pressure per applicable table is achieved. Replace regulator cap. Refer to *Figure 4*.

   For 170 pound tumblers, loosen regulator knob screws. Refer to *Figure 3*. Turn knob to remove regulator cap and adjust regulator screw until the burner orifice pressure per applicable table is achieved. Replace regulator cap.
5. Commission tumbler for use.



1	Size Stamped on Orifice

Figure 6

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Exhaust Requirements

WARNING

A drying tumbler produces combustible lint. To reduce the risk of fire, the tumbler must be exhausted to the outdoors.

W057

To reduce the risk of fire and accumulation of combustible gases, DO NOT exhaust tumbler air into a window well, gas vent, chimney or enclosed, unventilated area such as an attic, ceiling, crawl space under a building, or concealed space of a building.

W506

Layout

Wherever possible, install tumblers along an outside wall, where duct length can be kept to a minimum and makeup air can be easily accessed. Construction must not block the airflow at the top rear of the tumbler. Doing so would prevent adequate air supply to the tumbler combustion chamber.

Make-Up Air

A tumbler is forced air exhausted and requires provisions for make-up air to replace air exhausted by tumbler. Refer to *Table 3*.

IMPORTANT: Do not obstruct flow of combustion and ventilation air.

Required Make-Up Air Opening (to the outside) for Each Tumbler	
Models	**Opening**
120 Pound	360 in^2 (2323 cm^2) *free air*
170 Pound	525 in^2 (3710 cm^2) *free air*

Table 3

Make-up air openings with louvers will restrict air flow. The opening must be increased to compensate for area taken up by louvers.

Make-up air openings in rooms containing tumbler(s) and/or gas fired hot water heater or other gravity vented appliances must be increased sufficiently to prevent downdrafts in any of the vents when all tumblers are in operation. Do not locate gravity vented appliances between tumbler(s) and make-up air openings. If it is necessary to duct make-up air to tumbler(s), increase area of duct work by 25% to compensate for any restriction in air movement.

Venting

WARNING

To reduce the risk of fire due to increased static pressure, we do not recommend installation of in-line secondary lint filters or lint collectors. If secondary systems are mandated, frequently clean the system to assure safe operation.

W749

IMPORTANT: Installing in-line filters or lint collectors will cause increased static pressure. Failure to maintain the secondary lint system will decrease tumbler efficiency and may void machine warranty.

For maximum efficiency and minimum lint accumulation, tumbler must be exhausted to the outdoors by the shortest possible route.

Proper sized exhaust ducts are essential for proper operation. All elbows should be sweep type. Exhaust ducts must be assembled so the interior surfaces are smooth, so the joints do not permit the accumulation of lint. DO NOT use plastic or thin foil ducts - rigid metal ducts are recommended. Use exhaust ducts made of sheet metal or other noncombustible material. DO NOT use sheet metal screws or fasteners on exhaust pipe joints which extend into the duct and catch lint. Use duct tape or pop-rivets on all seams and joints.

Verify that old ducts are thoroughly cleaned before installing new tumbler(s).

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WARNING

Improperly sized or assembled ductwork causes excess back pressure which results in slow drying, lint collecting in the duct, lint blowing back into the room, and increased fire hazard.

W355

NOTE: Exhaust ducts must be constructed of sheet metal or other noncombustible material. Such ducts must be equivalent in strength and corrosion resistance to ducts made of galvanized sheet steel not less than 0.0195 inch (0.495 mm) thick.

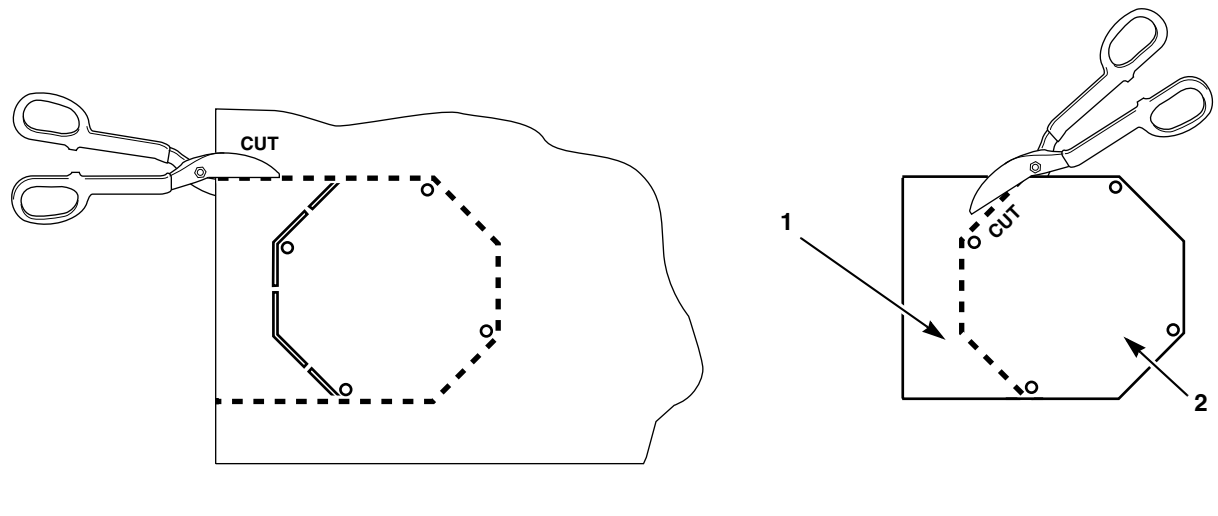
Where the exhaust duct pierces a combustible wall or ceiling, the opening must be sized per local codes. The space around the duct shall be sealed with noncombustible material.

NOTE: For best performance, provide an individual exhaust duct for each tumbler. Do not install a hot water heater in a room containing tumblers. It is better to have the water heater in a separate room with a separate air inlet.

Alternate Venting for 120 Pound Tumblers

The 120 pound tumbler is equipped from the factory to exhaust from the top; however, it may be converted to exhaust out the rear by doing the following (refer to ***Specifications and Dimensions*** section):

1. Remove belt guard cover.
2. Remove 10 inch (254 mm) diameter elbow and vertical duct.
3. Cut out shape from belt guard cover. Refer to *Figure 7*.
4. Screw octagonal piece over 10 inch (254 mm) diameter opening in top of belt guard.
5. Attach new exhaust duct to exhaust thimble on rear panel, following all requirements in this section.
6. Replace belt guard cover.



1 Discard

2 Cover (Refer to step 4)

Figure 7

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Individual Venting

For maximum efficiency and performance, it is preferred to exhaust tumbler(s) individually to the outdoors.

IMPORTANT: At no point may the cross sectional area of installed venting be less than the cross sectional area of the exhaust outlet of the tumbler.

The exhaust duct must be designed so the static back pressure measured 12 inches (305 mm) from the exhaust outlet does not exceed the maximum allowable pressure specified on the installation sticker on the rear of the tumbler.

NOTE: Static back pressure must be measured with the tumbler running.

The maximum allowable length of venting of the same diameter as the exhaust thimble is 14 feet (4.3 meters) and two 90° elbows or equivalent. If the equivalent length of a duct required for an installation exceeds the maximum allowable equivalent length, the diameter of a round duct must be increased by 10% for each additional 20 feet (6.1 meters). Cross section area of a rectangular duct must be increased by 20% for each additional 20 feet (6.1 meters). Refer to *Table 4* to determine equivalent venting:

NOTE: The maximum length of a flexible metal duct must not exceed 2.4 m (7.87 ft.) as required to meet UL2158, clause 7.3.2A.

Duct Diameter	Equivalent Length of Rigid Straight Duct
10 in. (254 mm)	One 90° elbow = 11.6 ft. (3.5 m)
12 in. (305 mm)	One 90° elbow = 14 ft. (4.3 m)
14 in. (356 mm)	One 90° elbow = 16 ft. (4.9 m)
16 in. (406 mm)	One 90° elbow = 18.7 ft. (5.7 m)
18 in. (457 mm)	One 90° elbow = 21 ft. (6.4 m)
Equivalent Length (ft.) = 1.17 x Duct Diameter (in.)	

Table 4

Example: A 12 inch (305 mm) diameter duct's equivalent length of 14 feet (4.3 meters) of duct and two 90° elbows is:

Equivalent Length: = 14 ft. (4.3 m) + (2) 90° elbows
= 14 ft. (4.3 m) + 14 ft. (4.3 m) + 14 ft. (4.3 m)
= 42 ft. (12.8 m)

With the tumbler in operation, airflow at any point in the duct should be at least 1200 feet per minute (366 meters per minute) to ensure that lint remains airborne. If 1200 feet per minute cannot be maintained, schedule monthly inspections and cleaning of the ductwork.

Manifold Venting

While it is preferable to exhaust tumblers individually to the outdoors, a main collector duct may be used if it is sized according to *Figure 10* and *Figure 11*. This illustration indicates minimum diameters, and should be increased if collector length exceeds 20 feet (6.1 meters). Manifold duct may be rectangular in cross section, as long as area is not reduced. Provisions should be made for lint removal and cleaning of duct.

Manifold duct must be tapered, as shown in *Figure 8*. Individual tumbler ducts must enter manifold duct at a 45° angle in the direction if airflow.

NOTE: Never connect a tumbler duct at a 90° angle to a collector duct. Refer to *Figure 8*. Doing so will cause excessive back pressure, resulting in poor performance. Never connect two tumbler exhaust ducts directly across from each other at the point of entry to manifold duct.

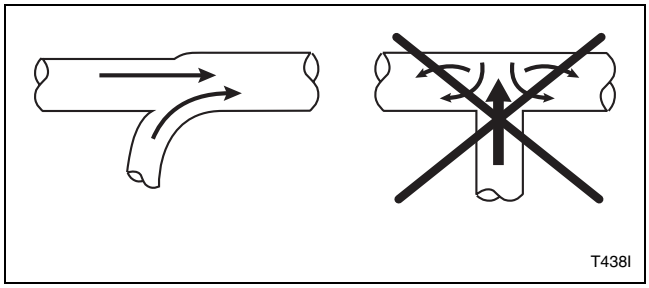

Figure 8

Exhaust system must be designed so static back pressure measured 12 inches (305 mm) from exhaust thimble does not exceed maximum allowable pressure specified on installation sticker on rear of tumbler. This must be measured with all tumblers running that are vented into collector.

With the tumbler in operation, airflow at any point in the duct should be at least 1200 feet per minute (366 meters per minute) to ensure that lint remains airborne. If 1200 feet per minute cannot be maintained, schedule monthly inspections and cleaning of the ductwork.

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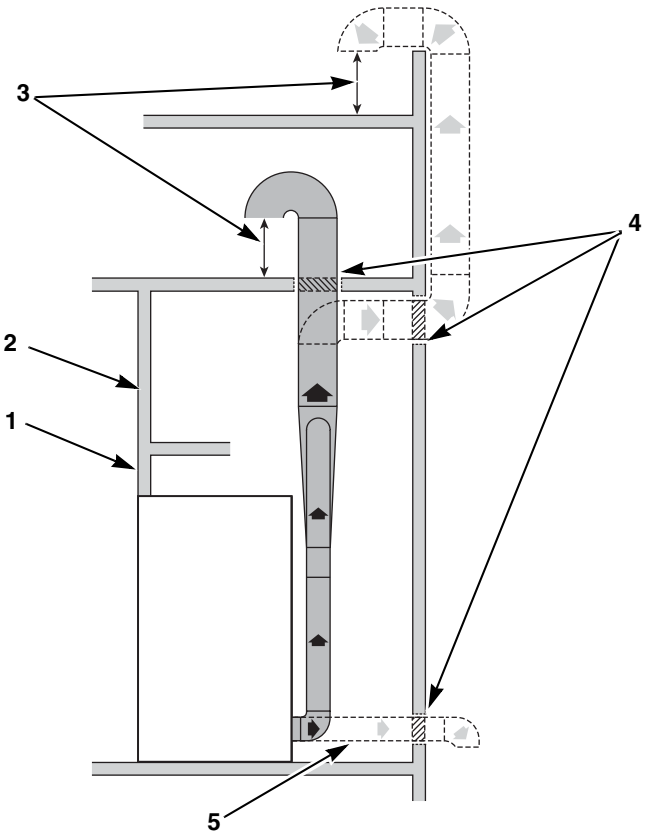
Exhaust Requirements



TMB2103N

1	Removable strip of panel in framing wall to permit removal of tumbler from framing wall
2	Partition or bulkhead
3	Minimum distance between exhaust opening and roof, ground or other obstruction: 36 in. (914 mm)
4	2 in. (51 mm) minimum clearance on both sides of duct
5	Exhaust airflow – maximum length of duct: 14 ft. (4.3 m)

Figure 9

NOTE: Do not install wire mesh or screen in exhaust duct opening to avoid lint build-up or impacting proper discharge of air from tumblers.

NOTE: Where exhaust duct pierces a combustible wall or ceiling, the opening must be sized per local codes.

NOTE: Inside of duct must be smooth. Do not use sheet metal screws to join sections.

Consult your local building code for regulations which may also apply.

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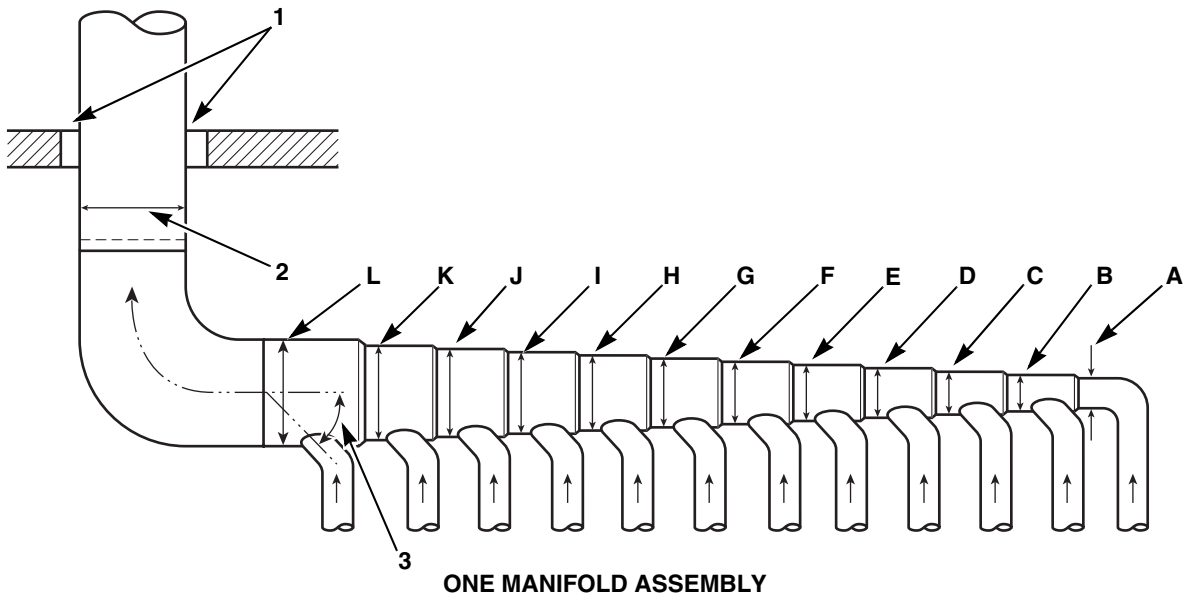

ONE MANIFOLD ASSEMBLY

TMB2019N

1	**NOTE: Where the exhaust duct pierces a combustible wall or ceiling, the opening MUST be sized per local codes.**	**2**	Outlet Duct Diameter
		3	45° Typical

Figure 10

Duct Station	120 Pound	170 Pound
	10 in. (254 mm) Duct	**12 in. (305 mm) Duct**
A	10 in. (254 mm)	12 in. (305 mm)
B	15 in. (381 mm)	17 in. (432 mm)
C	18 in. (457 mm)	21 in. (533 mm)
D	21 in. (533 mm)	24 in. (610 mm)
E	24 in. (610 mm)	27 in. (686 mm)
F	26 in. (660 mm)	30 in. (762 mm)
G	28 in. (711 mm)	32 in. (813 mm)
H	30 in. (762 mm)	34 in. (864 mm)
I	32 in. (813 mm)	36 in. (914 mm)
J	33 in. (838 mm)	38 in. (965 mm)
K	35 in. (889 mm)	40 in. (1016 mm)
L	36 in. (914 mm)	42 in. (1067 mm)

Table 5

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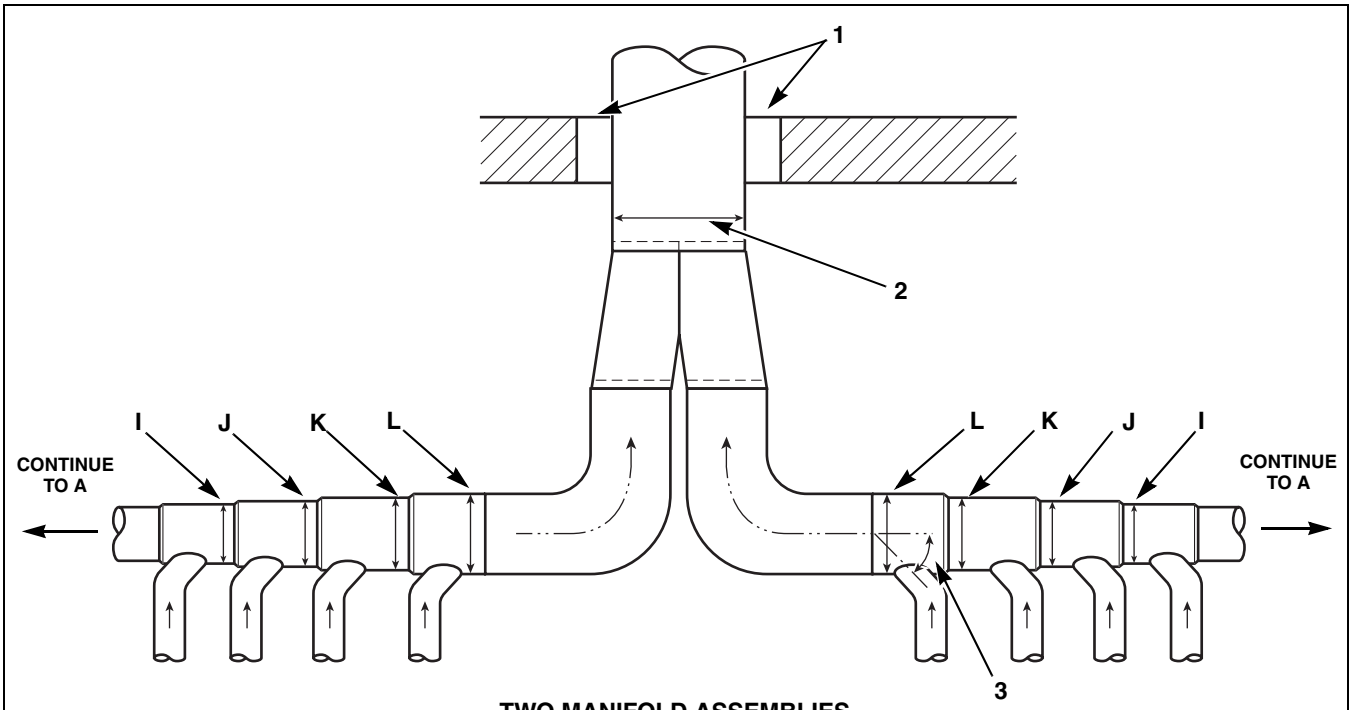
Exhaust Requirements



1	**NOTE: Where the exhaust duct pierces a combustible wall or ceiling, the opening MUST be sized per local codes.**	2	Outlet Duct Diameter
		3	45° Typical

Figure 11

Duct Station	120 Pound	170 Pound
	10 in. (254 mm) Duct	12 in. (305 mm) Duct
A	15 in. (381 mm)	17 in. (432 mm)
B	21 in. (533 mm)	24 in. (610 mm)
C	26 in. (660 mm)	30 in. (762 mm)
D	30 in. (762 mm)	34 in. (864 mm)
E	33 in. (838 mm)	38 in. (965 mm)
F	36 in. (914 mm)	42 in. (1067 mm)
G	39 in. (991 mm)	45 in. (1143 mm)
H	42 in. (1067 mm)	45 in. (1143 mm)
I	45 in. (1143 mm)	52 in. (1321 mm)
J	47 in. (1194 mm)	54 in. (1372 mm)
K	49 in. (1245 mm)	57 in. (1448 mm)
L	51 in. (1295 mm)	60 in. (1524 mm)

Table 6

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Gas Requirements

WARNING

To reduce the risk of fire or explosion, DO NOT CONNECT THE GAS LINE TO THE TUMBLER IF THE GAS SERVICE IS NOT THE SAME AS THAT SPECIFIED ON THE TUMBLER SERIAL PLATE! It will first be necessary to convert the gas burner orifice and gas valve. Appropriate conversion kits are available.

W060

IMPORTANT: Any product revisions or conversions must be made by the Manufacturer's Authorized Dealers, Distributors or local service personnel.

WARNING

The tumbler and its individual shut-off valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 0.5 psig (3.45 kPa).

The tumbler must be isolated from the gas supply piping system by closing its individual manual shut-off valve during any pressure testing of the gas supply piping system at test pressure equal to or less than 0.5 psig (3.45 kPa).

W061R2

IMPORTANT: The installation must comply with local codes or, in the absence of local codes:

- **with the latest edition of the "National Fuel Gas Code," ANSI Z223.1/NFPA 54 in the U.S.A.,**
- **with CAN/CSA-B149.1 Natural Gas and Propane Installation Code in Canada,**
- **and Australian Gas Association/Australian L.P. Gas Association requirements in Australia.**

Obtain specific gas service pipe size from the gas supplier. Refer to *Table 7* for general pipe size.

The following must be furnished and installed by the customer for the gas service line to each tumbler. Refer to *Figure 12*.

- Sediment traps
- Shut-off valves
- Supply pressure taps

It is important that equal pressure be maintained at all tumbler gas connections. This can be done by installing a one inch (25 mm) pipe gas loop. Refer to *Figure 13*.

WARNING

To reduce the risk of fire or explosion, if the tumbler is to be connected to Liquefied Petroleum (L.P.) gas, a vent to the outdoors must be provided in the room where the tumbler is installed.

W062

NATURAL GAS line pressure must be maintained at 6.5 water column inches (1.62 kPa), with no less than 5 water column inches (1.24 kPa) and no more than 10.5 water column inches (2.61 kPa), with all gas appliances running (tumblers, water heaters, space heaters, furnace, etc.). An in-line pressure regulator may be required if the line pressure exceeds 8 water column inches (2.0 kPa) with all gas appliances running.

LIQUID PETROLEUM GAS (L.P.) line pressure must be maintained at 11 water column inches (2.74 kPa), with no less than 10 water column inches (2.49 kPa) and no more than 13 water column inches (3.23 kPa), with all gas appliances running (tumblers, water heaters, space heaters, furnace, etc.).

For converting Non-CE models from Natural Gas to L.P. Gas:

120 Pound – M4577P3
170 Pound – M4592P3

CE GASES refers to ***Installing CE Gas Drying Tumblers*** section, the above data does not apply to the CE.

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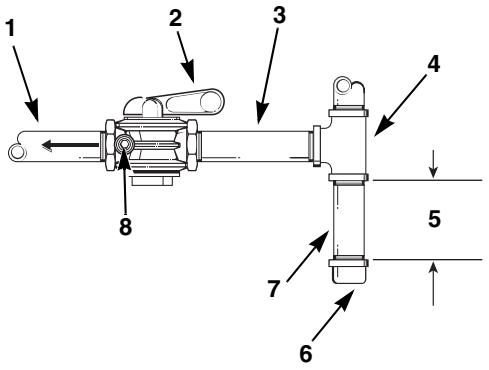

1	Gas Line to Tumbler Controls
2	Shut-Off Valve
3	Gas Supply Piping System
4	Gas “T” Fitting
5	6 in. (152 mm) Minimum Gas Pipe
6	Gas Pipe Cap
7	Sediment Trap
8	Supply Pressure Tap

Figure 12

Turn on gas and check all pipe connections (internal and external) for gas leaks with a non-corrosive leak detection fluid. Purge air in gas service line by operating the tumbler in the drying mode. If burner does not light and unit goes into lockout, open and close the door and restart. Repeat these steps until burner ignites. **Use pipe compound, resistant to actions of L.P. Gas, on all pipe threads.**

WARNING

Check all pipe connections, internal and external, for gas leaks using a non-corrosive leak detection fluid. To reduce the risk of explosion or fire, DO NOT USE AN OPEN FLAME TO CHECK FOR GAS LEAKS! Gas connections should be checked twice a year for leakage.

W635

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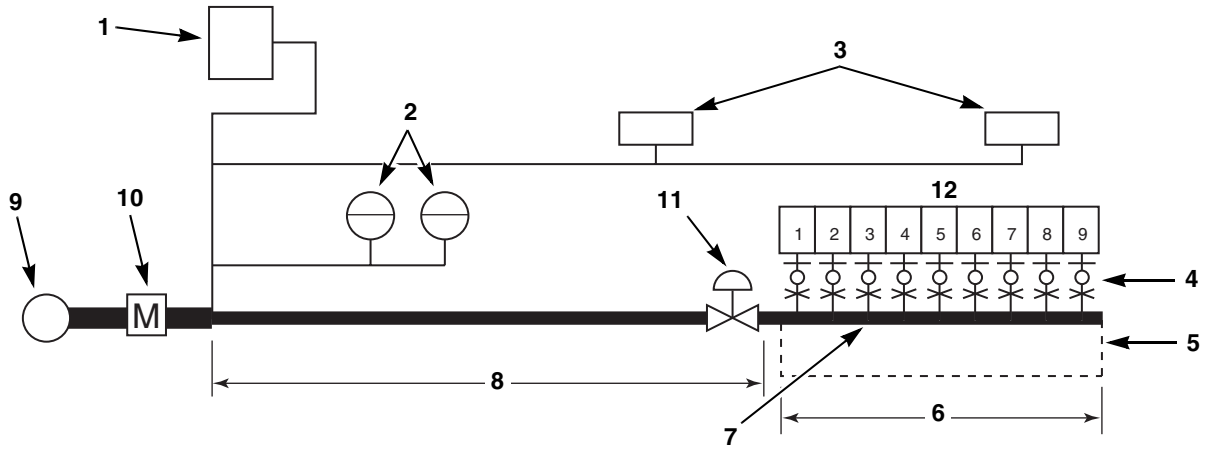
Gas Supply Pipe Sizing and Looping



TMB2126N

1	Gas Furnace (120,000 Btu/hr)	8	25 ft. (7.6 m)
2	Gas Water Heaters (400,000 Btu/hr each)	9	Main Regulator
3	Gas Space Heaters (70,000 Btu/hr each)	10	Gas Meter
4	Sediment Traps, Supply Pressure Taps and Shut-Off Valves. Refer to *Figure 12*.	11	Pressure Regulator (If required)
5	1 in. (25.4 mm) Gas Pipe Loop	12	120 Pound Tumblers (300,000 Btu/hr each) 170 Pound Tumblers (395,000 Btu/hr each)
6	19 ft. (5.8 m)		
7	Minimum Pipe Size to Tumbler is 0.75 in. for 120 Pound Gas, 1 in. for 170 Pound Gas		

SAMPLE CALCULATIONS:

Equivalent length = Total length of main gas supply pipe to the far end of the tumblers.
= 25 ft. + 19 ft. (7.6 m + 5.8 m) gas supply pipe
= 44 ft. (13.4 m) total gas line

Total Btu/hr = The sum of the Btu/hr of all 120 pound tumblers being fed by the main gas supply pipe.
= 9 x 300,000
= 2,700,000 Btu/hr

Using *Table 7*, the main supply pipe diameter should be 3 in. (76 mm).

IMPORTANT: Gas loop piping must be installed as illustrated to equalize gas pressure for all tumblers connected to single gas service. Other gas using appliances should be connected upstream from loop.

Figure 13

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Gas Requirements

Gas Appliances Total Btu/hr	Gas Pipe Size Required for 1000 Btu Natural Gas — 0.64 Specific Gravity at 7 ± 1.5 inches (17.4 ± 4 mbar, 1.74 ± 0.37 kPa) Water Column Pressure					
	Equivalent Length					
	25 feet (7.63 m)	50 feet (15.25 m)	75 feet (22.88 m)	100 feet (30.50 m)	125 feet (38.13 m)	150 feet (45.75 m)
	Based on 0.3 in. Water Column Pressure Drop for Length Given Sizes shown in inches (mm)					
300,000	1 (25.40)	1.25 (31.75)	1.25 (31.75)	1.5 (38.10)	1.5 (38.10)	1.5 (38.10)
400,000	1.25 (31.75)	1.25 (31.75)	1.5 (38.10)	1.5 (38.10)	1.5 (38.10)	2 (50.80)
500,000	1.25 (31.75)	1.5 (38.10)	1.5 (38.10)	2 (50.80)	2 (50.80)	2 (50.80)
600,000	1.5 (38.10)	1.5 (38.10)	2 (50.80)	2 (50.80)	2 (50.80)	2 (50.80)
700,000	1.5 (38.10)	2 (50.80)	2 (50.80)	2 (50.80)	2 (50.80)	2.5 (63.50)
800,000	1.5 (38.10)	2 (50.80)	2 (50.80)	2 (50.80)	2.5 (63.50)	2.5 (63.50)
900,000	2 (50.80)	2 (50.80)	2 (50.80)	2.5 (63.50)	2.5 (63.50)	2.5 (63.50)
1,000,000	2 (50.80)	2 (50.80)	2 (50.80)	2.5 (63.50)	2.5 (63.50)	2.5 (63.50)
1,100,000	2 (50.80)	2 (50.80)	2.5 (63.50)	2.5 (63.50)	2.5 (63.50)	2.5 (63.50)
1,200,000	2 (50.80)	2 (50.80)	2.5 (63.50)	2.5 (63.50)	2.5 (63.50)	2.5 (63.50)
1,300,000	2 (50.80)	2.5 (63.50)	2.5 (63.50)	2.5 (63.50)	2.5 (63.50)	3 (76.20)
1,400,000	2 (50.80)	2.5 (63.50)	2.5 (63.50)	2.5 (63.50)	3 (76.20)	3 (76.20)
1,500,000	2 (50.80)	2.5 (63.50)	2.5 (63.50)	2.5 (63.50)	3 (76.20)	3 (76.20)
1,600,000	2 (50.80)	2.5 (63.50)	2.5 (63.50)	3 (76.20)	3 (76.20)	3 (76.20)
1,700,000	2 (50.80)	2.5 (63.50)	2.5 (63.50)	3 (76.20)	3 (76.20)	3 (76.20)
1,800,000	2.5 (63.50)	2.5 (63.50)	3 (76.20)	3 (76.20)	3 (76.20)	3 (76.20)
1,900,000	2.5 (63.50)	2.5 (63.50)	3 (76.20)	3 (76.20)	3 (76.20)	3 (76.20)
2,000,000	2.5 (63.50)	2.5 (63.50)	3 (76.20)	3 (76.20)	3 (76.20)	3.5 (88.90)
2,200,000	2.5 (63.50)	3 (76.20)	3 (76.20)	3 (76.20)	3.5 (88.90)	3.5 (88.90)
2,400,000	2.5 (63.50)	3 (76.20)	3 (76.20)	3 (76.20)	3.5 (88.90)	3.5 (88.90)
2,600,000	2.5 (63.50)	3 (76.20)	3 (76.20)	3.5 (88.90)	3.5 (88.90)	3.5 (88.90)
2,800,000	2.5 (63.50)	3 (76.20)	3 (76.20)	3.5 (88.90)	3.5 (88.90)	3.5 (88.90)
3,000,000	2.5 (63.50)	3 (76.20)	3.5 (88.90)	3.5 (88.90)	3.5 (88.90)	4 (101.60)
3,200,000	3 (76.20)	3 (76.20)	3.5 (88.90)	3.5 (88.90)	3.5 (88.90)	4 (101.60)
3,400,000	3 (76.20)	3.5 (88.90)	3.5 (88.90)	3.5 (88.90)	4 (101.60)	4 (101.60)
3,600,000	3 (76.20)	3.5 (88.90)	3.5 (88.90)	3.5 (88.90)	4 (101.60)	4 (101.60)
3,800,000	3 (76.20)	3.5 (88.90)	3.5 (88.90)	4 (101.60)	4 (101.60)	4 (101.60)
4,000,000	3 (76.20)	3.5 (88.90)	3.5 (88.90)	4 (101.60)	4 (101.60)	4 (101.60)

For L.P. Gas, correct the total Btu/hr by multiplying it by 0.6. The answer is the equivalent Btu on the above chart.

The installation must conform with local codes or, in the absence of local codes:

- **with the latest edition of the "National Fuel Gas Code," ANSI Z223.1/NFPA 54 in the U.S.A.,**
- **with CAN/CSA-B149.1 or Natural Gas and Propane Installation Code in Canada,**
- **and Australian Gas Association/Australian L.P. Gas Association requirements in Australia.**

Table 7

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High Altitude Orifice Sizing

For proper operation at altitudes above 2000 feet (610 meters), the gas orifice size must be reduced to ensure complete combustion. Refer to *Table 8*.

For CE models, consult local gas supplier.

Non-CE Models									
Model	Gas	Altitude		Orifice					New Rate
		feet	m	No.	inches	mm	Quantity	Part No.	(Btu/hr)*
120L/N	Natural Gas	2001 – 4000	610 – 1220	14	0.1820	4.6	3	M411371	276,000
		4001 – 6000	1221 – 1830	16	0.1770	4.5		M411373	252,000
		6001 – 8000	1831 – 2440	17	0.1730	4.4		M411374	228,000
		8001 – 10,000	2441 – 3050	19	0.1660	4.2		M402995	204,000
	L.P. Gas	2001 – 4000	610 – 1220	35	0.1100	2.8		M402487	276,000
		4001 – 6000	1221 – 1830	36	0.1065	2.7		M411375	252,000
		6001 – 8000	1831 – 2440	38	0.1015	2.6		M411376	228,000
		8001 – 10,000	2441 – 3050	40	0.0980	2.5		M406361	204,000
170L/N	Natural Gas	2001 – 4000	610 – 1220	14	0.1820	4.6	4	M411371	363,400
		4001 – 6000	1221 – 1830	16	0.1770	4.5		M411373	331,800
		6001 – 8000	1831 – 2440	17	0.1730	4.4		M411374	300,200
		8001 – 10,000	2441 – 3050	19	0.1660	4.2		M402995	268,600
	L.P. Gas	2001 – 6000	610 – 1830	30	0.1285	3.3	3	M401021	363,400
		6001 – 10,000	1831 – 3050	31	0.1200	3.0		M401017	300,200
*Btu/hr derate of 4% per 1000 ft. (305 m) of altitude.									

Table 8

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Electrical Requirements

WARNING

To reduce the risk of electric shock, fire, explosion, serious injury or death:
- **Disconnect electric power to the tumbler before servicing.**
- **Close gas shut-off valve to gas tumbler before servicing.**
- **Close steam valve to steam tumbler before servicing.**
- **Never start the tumbler with any guards/ panels removed.**
- **Whenever ground wires are removed during servicing, these ground wires must be reconnected to ensure that the tumbler is properly grounded.**

W002

To reduce the risk of fire and electric shock, check with a qualified serviceman for proper grounding procedures. Improper connection of the equipment grounding conductor may result in a risk of electric shock.

W068

To reduce the risk of fire and electric shock, if electrical supply is coming from a three phase service, DO NOT connect a "High Leg" or "Stinger Leg" to a single phase machine. On a three phase machine, if there is a "High Leg" or "Stinger Leg" it should be connected to L3.

W069

NOTE: To ensure protection against shock, this tumbler MUST be electrically grounded in accordance with the local codes or, in the absence of local codes, with the latest edition of the National Electrical Code ANSI/NFPA No. 70. In Canada the electrical connections are to be made in accordance with CSA C22.1 latest edition Canadian Electrical Code, Part I and/or local codes. Electrical work should be done by a qualified electrician.

Grounding Instructions

This tumbler must be grounded. In the event of malfunction or breakdown, grounding will reduce the risk of electric shock by providing a path of least resistance for electric current. This tumbler must be connected to a grounded metal, permanent wiring system; or an equipment grounding conductor must be run with the circuit conductors and connected to the appropriate ground location.

Metal conduit and/or BX cable is not considered ground. Connecting the Neutral from the electrical service box to the tumbler ground screw does not constitute a ground. A dedicated ground conduit (wire) must be connected between the electrical service box ground bar and the tumbler ground screw.

WARNING

All electrical connections should be made by a qualified electrician.

To reduce the risk of electrical shock, de-energize the electrical circuit being connected to the tumbler before making any electrical connections. Never attempt to connect a live circuit.

W070

CAUTION

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.

W071

For CE Models Only

All models are factory-equipped with an emergency stop button on the front panel.

NOTE: Activation of the emergency stop switch stops all machine control circuit functions, but DOES NOT remove all electrical power from machine.

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Service/Ground Location

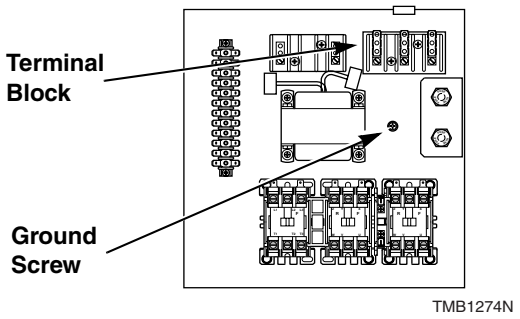
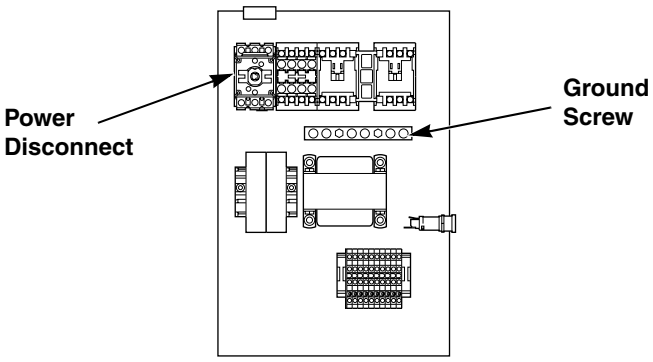
Model	Heat Source	Ground and Terminal Block Locations
Non-CE	Gas or Steam	 TMB1274N
CE	Gas or Steam	 TMB1275N

Figure 14

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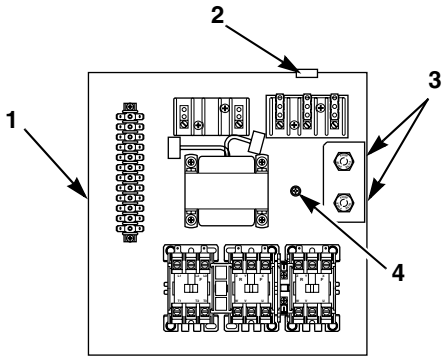
To Connect Electrical Service to the Tumbler

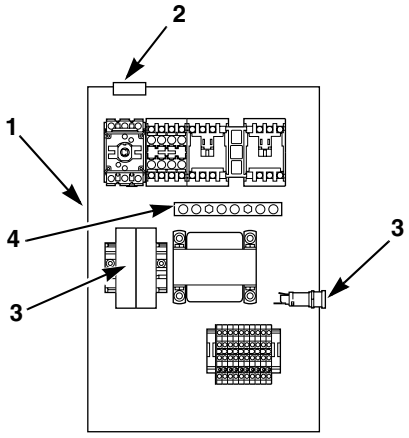
NOTE: The wiring diagram is located in the junction or contactor box.

1. Install a circuit breaker as close to the tumbler as possible. If more than one tumbler is being installed, a disconnect switch or circuit breaker should be provided for each. This will make it possible to disconnect each tumbler for maintenance purposes.
2. Connect conduit-encased leads to the disconnect switch or circuit breaker. Connect wire leads to the appropriate labeled terminal on the terminal block. The ground wire must be connected to the ground connection as shown in *Figure 15*.
3. Check the electrical service phase sequence (three phase only). If one of the power leads is a "high leg," connect it to lead L3 in the tumbler. The cylinder must rotate clockwise and the fan must rotate counterclockwise (as viewed from the front of the tumbler – with selector switch in non-reverse position). If not, interchange leads L1 and L2 in the tumbler connection box.



NON-CE MODE

TMB1274N



CE MODELS

TMB1275N

1	Contactor Box or Junction Box
2	Electrical Service
3	Fuses
4	Ground Screw

Figure 15

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Jumper Configuration Instructions

Changing the transformer configuration jumper is required, **PRIOR TO SUPPLYING POWER TO THE MACHINE**, if any of the following apply:

IMPORTANT: Failure to install the proper configuration jumper may result in damage to sensitive electronic controls and may void warranty.

- You have 200 – 208 Volt service and are connecting a model rated for 240 Volt operation.

  Replace the 240 Volt jumper with the 208 Volt jumper per the conversion label, located on the rear of the tumbler, sign and date conversion label to document the conversion.

- You have 400 – 415 Volt service and are connecting a model rated for 380 Volt operation.

NOTE: CE electro-mechanical timer models (MT, RT and CD control suffixes) do NOT require conversion jumper.

Replace the 380 Volt jumper with the 415 Volt jumper per the conversion label, located on the rear of the tumbler, sign and date conversion label to document the conversion.

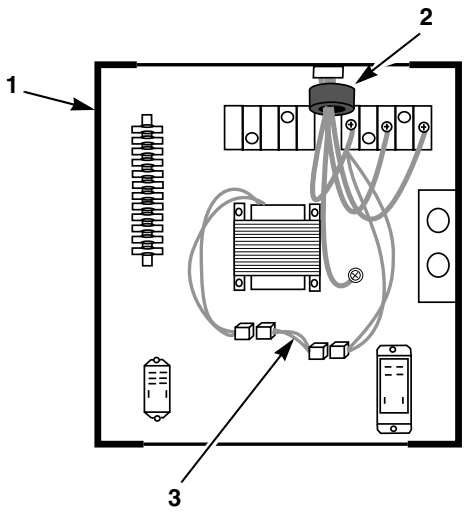
Ferrite Ring Installation

OPL Micro Control Models Only

The ferrite ring provided in the literature packet must be installed over the power leads during connection of electrical service. The ferrite protects the sensitive electronic controls from destructive electrical disturbances which may be present on power lines to the machine. Failure to properly install the ferrite ring may result in damage to the electronic controls and will void control warranty.

To Install:

1. Immediately after connection of power leads and before applying power to machine, locate each of the incoming service leads including ground.
2. Snap the ferrite ring closed over all the service leads inside of the contactor box as shown. It is important that the ferrite ring be installed inside the contactor box. Refer to *Figure 16*. Do not install the ferrite outside of the box or other area. Make sure that service leads are in the center of the ferrite before closing the ring so not to pinch or damage leads.



1	Contactor Box
2	Ferrite Ring
3	Jumper

Figure 16

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Electrical Requirements

Refer to *Table 9*.

NOTE: Minimum wire sizes are obtained from Canadian Electrical Code and are intended for use as a guideline only. Electrical connections should be made only by a qualified electrical contractor in accordance with all applicable local and national requirements.

NOTE: Electrical specifications below are subject to change without notice. Always refer to product serial plate for most current specifications of product being installed.

NOTE: Use copper conductors only.

NOTE: 3 Phase Only– Each tumbler must be connected to its own individual branch circuit breaker, not fuses, to avoid the possibility of "single phasing" and causing premature failure of the motor(s).

For 120 Pound Tumbler Models

Serial Plate Rating	Terminal Block Connections Required	Rated Current*	Breaker Rating	Breaker Poles	Recommended Wire Size
208-230V/60Hz/3ph	L1, L2, L3 and ground	7.7	15 Amps	3	14 AWG (2.08 mm^2)
380-415V/50Hz/3ph	L1, L2, L3 and ground	3.8	10 Amps	3	14 AWG (2.08 mm^2)
380V/60Hz/3ph	L1, L2, L3 and ground	4.1	10 Amps	3	14 AWG (2.08 mm^2)
440V/60Hz/3ph	L1, L2, L3 and ground	3.8	10 Amps	3	14 AWG (2.08 mm^2)
460-480V/60Hz/3ph	L1, L2, L3 and ground	3.9	10 Amps	3	14 AWG (2.08 mm^2)
* Current ratings vary slightly depending on model; refer to serial plate.					

For 170 Pound Tumbler Models

Serial Plate Rating	Terminal Block Connections Required	Rated Current*	Breaker Rating	Breaker Poles	Recommended Wire Size
208-230V/60Hz/3ph	L1, L2, L3 and ground	13.5	20 Amps	3	12 AWG (3.31 mm^2)
380-415V/50Hz/3ph	L1, L2, L3 and ground	6.9	15 Amps	3	14 AWG (2.08 mm^2)
380V/60Hz/3ph	L1, L2, L3 and ground	6.6	15 Amps	3	14 AWG (2.08 mm^2)
440V/60Hz/3ph	L1, L2, L3 and ground	6.4	15 Amps	3	14 AWG (2.08 mm^2)
460-480V/60Hz/3ph	L1, L2, L3 and ground	6.7	15 Amps	3	14 AWG (2.08 mm^2)
* Current ratings vary slightly depending on model; refer to serial plate.					

Table 9

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Steam Requirements

NOTE: Machines require a constant 80 to 100 psig (5.62 to 7.03 kg/sq cm) steam service for optimum operation. The maximum allowable steam pressure for use with 60 Hertz or 50 Hertz tumblers is 125 psig (8.6 bar). In no case may the pressure exceed the above value.

Obtain specific steam service pipe sizes from steam system supplier or a qualified steam fitter.

- Refer to *Figure 17* and *Figure 18* for proper steam pipe configurations.
- To prevent condensate draining from headers to tumbler, piping should have a minimum 12 inch (305 mm) rise above respective header. Do not make steam connection to header with a horizontal or downward facing tee or elbow.
- Whenever possible, horizontal runs of steam lines must drain, by gravity, to respective steam header. Water pockets or an improperly drained steam header will provide wet steam, causing improper operation of tumbler. If pockets or improper drainage cannot be eliminated, install a bypass trap to drain condensate from the low point in the steam header to the return.
- In both steam supply and steam return line, it is recommended that each have a pipe union and shut-off valve. This will enable you to disconnect the steam connections and service the tumbler while your laundry facility is in operation.
- Connect the steam solenoid valve to the related steam coil inlet connection with nipples, flex hoses, unions and tee.
- Strainers may require cleaning due to materials from hoses or pipes.
- Install vacuum breaker (optional), bucket trap with built-in strainer and check valve. For successful operation of tumbler, install trap 18 inches (457 mm) below coil and as near to the tumbler as possible. Inspect trap carefully for inlet and outlet markings and install according to trap manufacturer's instructions. If steam is gravity returned to boiler, omit trap but install vacuum breaker and check valve in return line near tumbler.
- Gravity return requires entire return plumbing be below steam coil outlets.
- Install union and shut-off valve in return line and make final pipe connections to return header.

NOTE: To prevent water hammering, route return lines below outlets of steam coils.

Piping Recommendations

- Trap each steam coil individually. Always keep the trap clean and in good working condition.
- When tumbler is on the end of a line of equipment, extend header at least 4 feet (1.2) beyond tumbler. Install shut-off valve, union, check valve and bypass trap at end of line. If gravity return to boiler, omit trap.
- Insulate steam supply and return line for safety of operator and safety while servicing tumbler.
- Keep tumbler in good working condition. Repair or replace any worn or defective parts.

WARNING

All system components must have a 125 psig (8.6 bar) working pressure. Shut-off valves must be installed upstream of the steam solenoid valve and downstream of each steam trap so components can be isolated for maintenance or emergency purposes.

All components (solenoid valve, traps) must be supported to minimize loads on the tumbler steam coil connections.

W480R2

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Installing Steam Trap and Making Condensate Return Connections

The steam trap must be installed and the coil outlet connections must be connected to the condensate return lines. The following steps outline the procedure for installing the steam trap and connecting the condensate return lines. Refer to *Figure 17* and *Figure 18* for typical installations.

1. Use flexible lines between steam inlet solenoid and steam coils, as well as outlet between steam coil and traps.
2. If necessary, install a strainer to the end of each flexible hose.
3. Install a steam trap to each strainer.

IMPORTANT: Steam trap must be installed a minimum of 18 inches (457 mm) below the steam coil outlet connections.

4. Install a shut-off valve to each steam trap.
5. Connect to the condensate return lines.
6. For steam solenoid valve wiring connections, refer to Wiring Diagram supplied with tumbler.

WARNING

All system components must have a 125 psig (8.6 bar) working pressure. Shut-off valves must be installed upstream of the steam solenoid valve and downstream of each steam trap so components can be isolated for maintenance or emergency purposes.

All components (solenoid valve, traps) must be supported to minimize loads on the tumbler steam coil connections.

W480R2

Thermal Oil Prep

It is the responsibility of the customer to install appropriate coil and heating system for thermal oil prep models. Alliance Laundry Systems, LLC. is not responsible for the performance or safety of the customer installed thermal oil system. To ensure proper operation, refer to the ***Specifications and Dimensions*** section for the BTU input of equivalent steam models. Thermal oil systems that do not deliver appropriate BTUs will dry slower. For solenoid valve wiring connections, refer to the Wiring Diagram supplied with tumbler.

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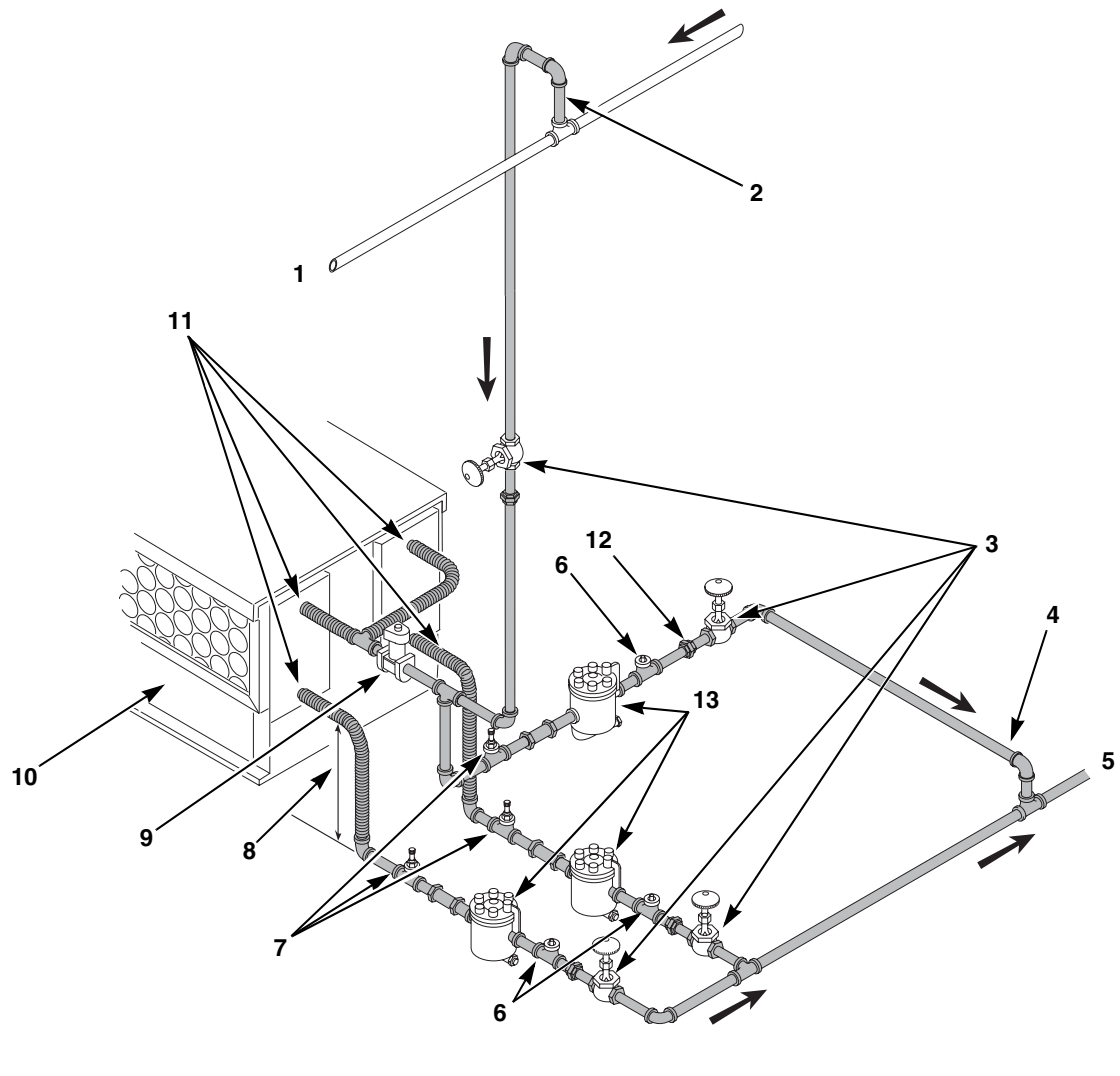
120 Pound Tumblers



NOTE: Refer to *Table 10* for sizing of steam lines. Piping must also be sized accordingly for length of runs and number of elbows.

1 Supply
2 12 in. (305 mm) Riser
3 Shut-Off Valve
4 Condensate Return Line from Supply Line
5 Return
6 Check Valve
7 Vacuum Breaker (Optional)
8 18 in. (457 mm) Drop
9 Solenoid Valve (Supplied with machine)
10 Steam Bonnet
11 Flexible Line
12 Union
13 Trap with Built-In Strainer

Figure 17

Model	Steam Pressure PSI (bar)	Minimum Pipe Diameter	Steam Trap Size * (Pounds Condensate/Hour)
120S	120-125 (8.3-8.6)	1 in. NPT	345
	60-120 (4.1-8.3)	1 in. NPT	345
	35-60 (2.4-4.1)	1-1/4 in. NPT	345

*Based on maximum psi.

Table 10

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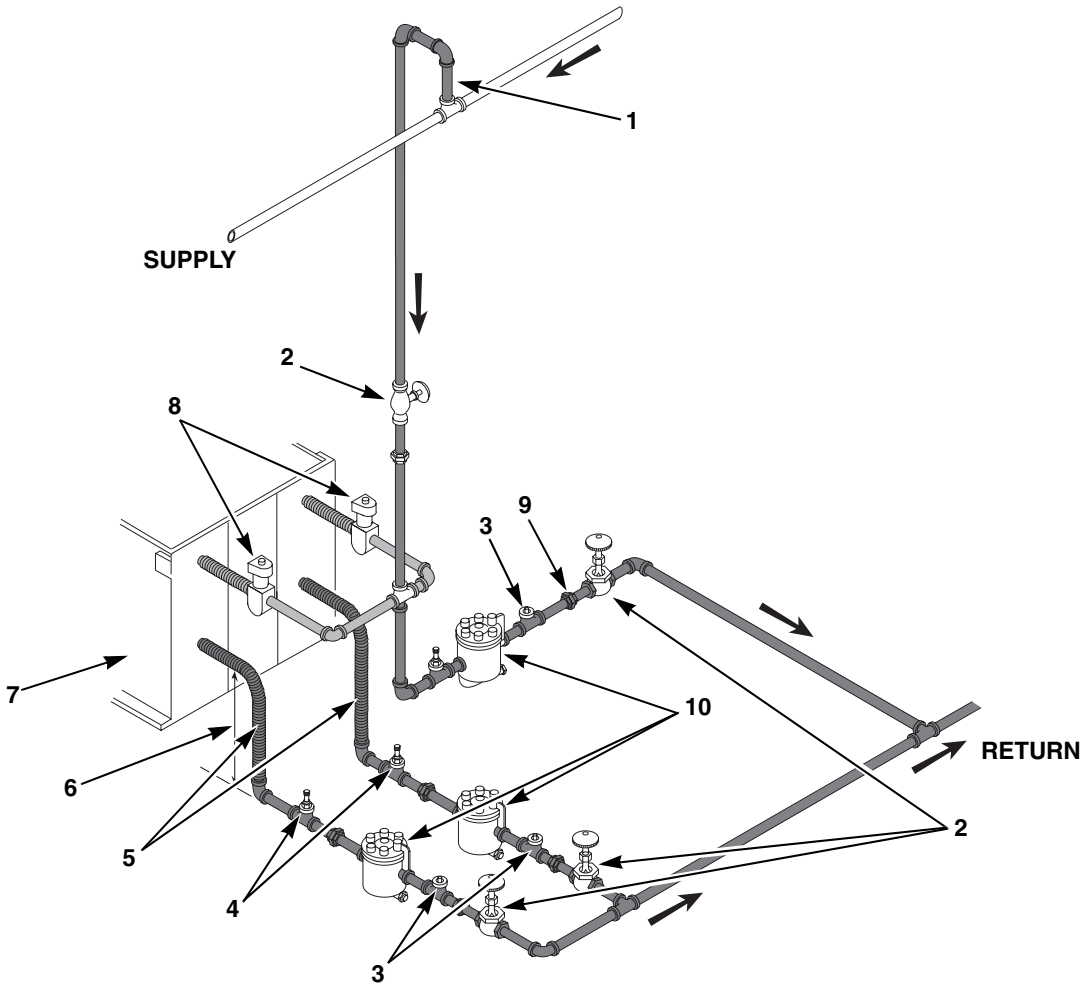
170 Pound Tumblers



NOTE: Refer to *Table 11* for sizing of steam lines. Piping must also be sized accordingly for length of runs and number of elbows.

1	Risers 12 in. (305 mm)	6	18 in. Drop (457 mm)
2	Shut-Off Valve	7	Steam Bonnet
3	Check Valve	8	Solenoid Valve (Supplied with machine)
4	Vacuum Breaker (optional)	9	Union
5	Condensate Return Line from Supply Line	10	Trap with Built-In Strainer

Figure 18

Model	Steam Pressure PSI (bar)	Minimum Pipe Diameter	Steam Trap Size * (Pounds Condensate/Hour)
170S	110-125 (7.5-8.6)	1 in. NPT	517
	60-110 (4.1-7.5)	1-1/4 in. NPT	517
	35-60 (2.4-4.1)	1-1/2 in. NPT	517

* Based on maximum psi.

Table 11

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Adjustments

WARNING

To reduce the risk of electric shock, fire, explosion, serious injury or death:
- **Disconnect electric power to the tumbler before servicing.**
- **Close gas shut-off valve to gas tumbler before servicing.**
- **Close steam valve to steam tumbler before servicing.**
- **Never start the tumbler with any guards/ panels removed.**
- **Whenever ground wires are removed during servicing, these ground wires must be reconnected to ensure that the tumbler is properly grounded.**

W002

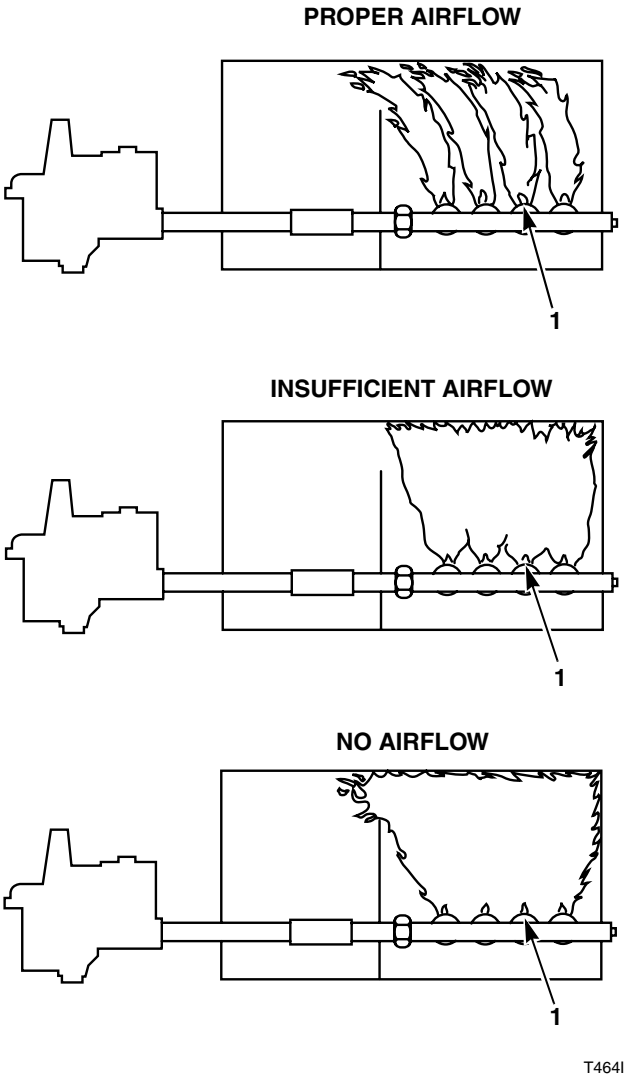
Gas Burner Air Shutter

NOTE: Air inlet shutters on the burner must be adjusted so sufficient air is metered into the system for proper combustion and maximum efficiency. Before adjusting the inlet shutters, be sure that all lint is removed from lint compartments and lint screen.

Air shutter adjustment will vary from location to location and will depend on the vent system, number of units installed, make-up air and line gas pressure. Opening the shutter increases the amount of primary air supplied to the burner, while closing the shutter decreases the primary air supply. Adjust air shutter as follows:

Refer to *Figure 19*.

1. Remove the upper access panel.
2. Start the tumbler and check the flame pattern. If the flame pattern is straight up, insufficient air is flowing through the tumbler and airflow switch is improperly set. A flame pattern that flares to the right and left indicates no air is flowing through the tumbler. Correct air and gas mixture is indicated if the flame pattern is primarily blue, with small yellow tips, and bends to the left of the heater section. Too little air is indicated if the flame is yellow, lazy and smoky.
3. To adjust the air shutter, loosen air inlet shutter adjusting screw.
4. Open or close air shutter as necessary to obtain proper flame intensity.
5. After air shutter is adjusted for proper flame, tighten air shutter adjusting screw securely.



1 Air Shutter Adjusting Screw

Figure 19

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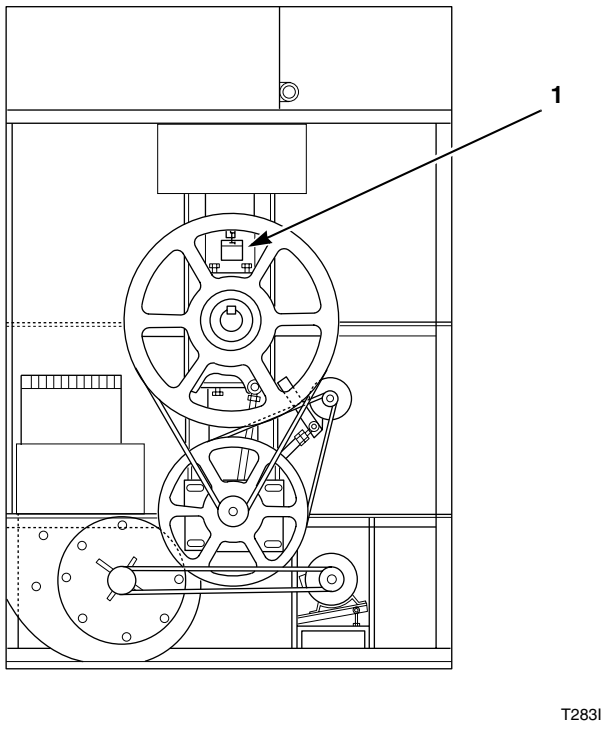
Airflow Switch

The airflow switch is set at the factory for proper operation. No adjustment necessary. Refer to *Figure 20*.

IMPORTANT: The airflow switch vane must remain closed during operation for the heating system to run. If the air flow switch vane opens and closes during the drying cycle, this indicates insufficient air flow through the tumbler. Any time the switch is open during the cycle, the heating system will shut off. If the switch opens and closes during the cycle, the heating system will turn off and on as the switch opens and closes (respectively). In the either case, the cylinder and fan will continue to operate normally throughout the cycle.



1 Airflow Switch

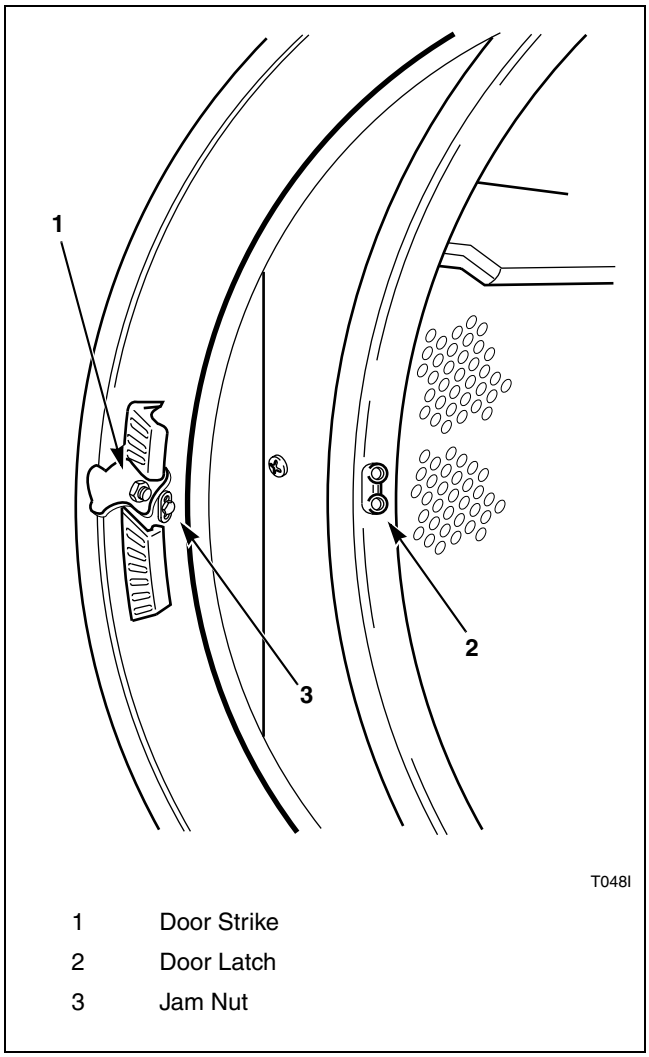
Figure 20

Loading Door Strike

The loading door strike must be adjusted to have sufficient tension to hold loading door closed against force of load tumbling against it. Proper adjustment is when 8-15 pounds (35.6-66.7 N) pull is required to open door.

If adjustment is required, refer to *Figure 21* and proceed as follows:

To adjust, open door, loosen jam nut and turn door strike screw in or out as required. Retighten jam nut.



1 Door Strike
2 Door Latch
3 Jam Nut

Figure 21

Loading Door Switch

Loading door switch is factory set; no field adjustment necessary.

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Belt Drive

The drive assemblies consist of motors, belts, eyebolts and a step pulley.

The pulley diameters are sized to produce a cylinder speed of 37-39 RPM for 120 pound models or 29-31 RPM for 170 pound models.

The step pulley assembly is used for speed reduction as well as a means of adjusting belt tension. The pulley mounting plate is attached to the cabinet. The frame mounting plate has vertically slotted holes allowing up and down movement of the step pulley mounting plate for belt adjustment.

Adjust the belt tension as follows:

1. Disconnect electrical power to the tumbler before attempting any adjustments to the drive assembly.
2. Loosen pulley mounting plate bolts.
3. Loosen the upper nut on the final drive eyebolt.
4. Rotate the lower nut of the final drive eyebolt clockwise until proper belt tension is achieved.
5. Rotate upper nut clockwise against the lower nut in order to lock it into place.
6. Tighten pulley mounting plate bolts. Recheck belt tension.
7. If necessary, adjust the drive motor belt tension eyebolt using a similar procedure.
8. Adjust blower belt tension on 120 pound 50 Hertz tumblers and all 170 pound tumblers using a similar procedure.

NOTE: Proper tensions for new belts are 45-55 pounds for the motor belt, 55-65 pounds for the final drive, 60-65 pounds for 120 pound blower, and 75-80 pounds for 170 pound blower measured with a Borroughs Belt Tension Gauge. Using a Browning Belt Tension Gauge, the motor belt deflection should be 0.31 inch at five pounds pressure, and final drive belt deflection should be 0.25 inch at five pounds pressure.

Belts should not slip or make any noise when starting up under normal load.

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Removing Tumbler from Service

If the tumbler is to be removed from service, perform the following steps where applicable:

- Turn off electrical supply external to machine.
- Turn off electrical disconnect on machine.
- Turn off gas supply external to machine.
- Turn off manual gas shut-off valve on the machine.
- Turn off steam supply external to machine.
- Remove all electric, gas and steam connections.

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